A COMPREHENSIVE ANALYSIS OF SIMPLE VERBS IN PERSIAN

by

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A Dissertation Submitted to the Faculty of the

DEPARTMENT OF LINGUISTICS

In Partial Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

In the Graduate College

THE UNIVERSITY OF ARIZONA

2019

THE UNIVERSITY OF ARIZONA
GRADUATE COLLEGE

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ACKNOWLEDGEMENTS

The beginnings of this research, and most of what is now chapter 3 in this dissertation, was funded by a research fellowship awarded by the Dr. Taleghani Graduate Endowment in Iranian Studies, for which I am eternally grateful.

First and foremost, I want to thank Simin Karimi, who was more than an advisor and mentor to me. I achieved what I have because of her. She is an amazing role model and professor. I also want to thank my committee members, Heidi Harley, and Robert Henderson for their time, and inspirational discussions and ideas. Many thanks to Diana Archangeli, Janet Nicol, Andy Barss, Diane Ohala, Mike Hammond, Natasha Warner, Mary Peterson, and Marian Wiseley for all their support and encouragement over the years.

I am grateful to Mojgan Homayounfar, Becky Sharp, Eunjiong (EJ) Ahn, Mohsen Mahdavi, Raha Ahmadian, Roya Kabiri, Ryan Smith, Jianrong Yu, Alex Trumen, Stanlee Donahoo, Colleen Patton, and Elise Bell for their friendship, help, discussions, feedback, and encouragement during my time at the University of Arizona. Also, many thanks to my cohort and classmates, JR Meyer, Shiloh Drake, Yuan-Lu Chen, Nick Kloehn, Cosette Terry-Itewaste, Mary-Caitlyn Valentinsson, Sam Johnston, and Gus Hahn-Powell for great class discussions and exciting study group sessions.

This work wouldn't exist without my M.A. advisors Jaklin Kornfilt and John Nissenbaum. Thank you for encouraging me to apply to the Ph.D. program at the University of Arizona, and showing me what I was capable of achieving.

Lastly, I would like to acknowledge my main support system: my sister, Sara Bajalan, my mother, Dona Kuch, and my husband, Javeed Nabors. It is because of them that I had the motivation to continue my education regardless of the hurdles I faced, and the energy to complete this work.

DEDICATION

To my two amazing sons, Musashi and Kiyaan, who can drain and energize me at the same time.

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ABSTRACT

This dissertation is an analysis of the internal construction of simple verbs in Persian within the Distributed Morphology (DM) framework. Farsi (a variant of Persian spoken in Iran) has two types of simple verbs: verbs with past and present alternating stems (*afzâ/afzud* 'increase,' *godâz*, *godâxt* 'fuse, melt'), and verbs that take the *pseudo-infinitive* morpheme, *-id*, in the past tense (*fahm/fahm-id* 'understand'). Either verb type *may* causativize with the morphological causative affix, *-ân-,* (*fahm-id/fahm**ân**d* 'understand/make understand'). This work, argues for a unified analysis of simple verbs, in which an acategorical root combines with a verbalizer to form a verbal stem. In the past tense, this verbalizer can be either null or overt. I show (in chapter 2) that the null verbalizer triggers alternations to the final phoneme of the root, and that this alternation is systematic. This is a unique and up-to-date analysis of these alternating past/present stems and one that is supported by evidence from synchronic and diachronic language change. In chapter 3, I argue against a mono-morphemic analysis of the *pseudo-infinitive* morpheme and claim this affix is in fact composed of an overt verbalizer, *-i-*, and the voiced version of the past tense affix, *-d*. In chapter four, I propose that the causative affix, *-ân-,* is a root attaching little-v. Following Folli and Harley's (2002, 2004) 'flavor of v' analysis, I claim that the causative affix is blocked in verbs that take a vDO flavor during numeration. Verbs that specify a vDO flavor in their structure are verbs that have certain restrictions on their agent, which do not permit subject demotion. The restrictions on the external arguments of these verbs is specified in the feature bundle in little-v. When Vocabulary Items (VI) compete for insertion in the structure, the VIs that are overspecified for the terminal node are blocked from insertion; hence, the blocking of the causative little-v, *-ân-,* from these verbs. This work not only provides a comprehensive list of simple verbs in Persian which includes their archaic, formal forms and the current colloquial forms, but also makes

exciting predictions about the direction of verb changes over time, as simple verbs are being replaced with complex predicates (CPrs) in the language.

CHAPTER ONE: INTRODUCTION

1.1 Goals of This Dissertation

This study is an analysis of the internal structure of Persian simple verbs executed within the Distributed Morphology framework (Halle & Marantz 1993, Harley 1995, Marantz 1997). Persian has two types of verbs: Complex predicates (CPrs) and simple verbs; simple verbs can be separated into two types: alternating verbs (chapter 2) and non-alternating verbs (chapter 3). The immediate goal of this work is to provide an up-to-date analysis of all types of simple verbs (i.e., alternating, non-alternating stems) in Farsi[1], which explains the alternations that occur in the stem in the past and present forms, and predicts the availability of any causative forms. Additionally, the collected data in this study is important to the cataloging of simple verbs in order to study their synchronic and diachronic changes. The larger goal of this work is to contribute to the greater study of causative constructions. The findings here confirm the existence of syntax at the word level, and also provides further evidence for Folli and Harley's (2002) proposal for little-v flavors as an explanation for the idiosyncratic behavior of verbs which the authors observed in Italian and English.

The overt synchronic change that occurs in simple verbs in Persian provides us with a unique opportunity to observe how speakers of a language subconsciously view and categorize the internal structure of these verbs. Furthermore, the findings presented here enhance our understanding of verbal structures and has the potential to contribute to the study of roots and the nature of little-v in complex predicates (CPrs) in Persian, and possibly other Iranian languages.

This chapter is organized as follows: 1.1 presents the main goals of this dissertation. 1.2 discusses the theoretical framework followed in this study. A summary of findings and claim of each chapter

[1] Farsi is a variety of Persian spoken in Iran. The Farsi dialect used in this work is the Tehrani dialect spoken in Tehran. For consistency, I will use the term *Persian* for the remainder of this work.

is presented in 1.3. The contributions of this work is discussed in 1.4, and notations and abbreviations used are reviewed in section 1.5.

1.2 Theoretical Framework and Assumptions

The results of this study can only be accomplished working within the Distributed Morphology (Halle and Marantz 1993, Harley 1995, Marantz 1997) framework. This is because Distributed Morphology (Halle and Marantz 1993, among others) abandons the traditional concept of a lexicon, and extends the features once constrained to morphology and distributes its content across phonology, syntax, and semantics; It offers the concept of acategorical roots[2], which derive their category from the structure. The concept of an acategorical root is not only aesthetically appealing, but also resolves existing inconsistencies regarding the attachment of the past tense and *pseudo-infinitive* affixes in simple verbs. I address these issues in chapter 3. The DM model delegates the different functions of what we call a "morpheme," into three separate lists: *Feature bundles, VIs and the encyclopedia*[3]. In chapter 3, the set of VIs that compete for the little-v position are introduced for Persian simple verbs. In chapter 4, the causative verbalizer is argued to also be a root-attaching little-v, thereby adding another VI to the set of VI that compete for insertion at the terminal node. Here, the first list of the "deconstructed morpheme," the *Feature Bundles*, will become important. The set of features in the *Feature Bundle* dictates whether a VI is overspecified and out of the running for insertion in the structure. List One, the abstract 'morphemes,' are bundles of "morphosyntactic features specifying structural relations" (Harley 2013:3). My work follows Folli and Harley (2002, 2004) in assuming different variations of these *Feature Bundles*

[2] According to Harley and Noyer (1999), content words are "l-morphemes" which are defined as different parts of speech first labeled 'roots' by Pesetsky (1995). The l-morpheme is in a category defining relationship with a function morpheme (f-morpheme). In this view, a verb is a root, which its closest c-commanding f-morpheme is v, Aspect, and Tense (Harley and Noyer 1999).

[3] See chapter 3 for a more detailed description.

for the verb (i.e., flavors of v). The combination of assuming an acategorical root, along with different VIs (overt or covert), and different feature bundles in the structure (e.g.,vDO, v, vCAUSE, etc.) allows for a streamlined analysis of simple verbs that is capable of accounting for all the data on Persian simple verbs, without exception.

1.3 Chapters

This study is composed of three main chapters. Chapter two analyzes the set of past/present alternating simple verbs and proposes the existence of a verbalizer position within the verb. I claim this verbalizer position to be occupied by a null verbalizer, which accounts for all alternation in these simple verbs. Chapter three analyzes the set of non-alternating simple verbs, and independently confirms the existence of an overt verbalizer. Chapter four looks at both alternating and non-alternating verbs in light of the new findings regarding the internal construction of the verb, and provides a structural explanation for what blocks the morphological causative. I provide a brief summary of each chapter below.

The goal in chapter two is to motivate the existence of a [+past] null verbalizer that initiates systematic changes to the root. The outcome of this discussion is a unified analysis of simple verbs, such that simple verbs in Persian, regardless of being root alternating or not, are complex and include a verbalizer intervening between the root and the past tense suffix.

In addition to arguing for a null verbalizer, I provide an explanation for the vowel alternations seen in the alternating class of simple verbs. I propose that two types of alternations exist for these roots: Primary and secondary. The secondary alternations are somewhat optional, and can occur in conjunction with a primary alternation. This alternation is: [V → o /C_C], and can alter any vowel that appears between two consonants. The primary alternations are either consonantal or vowel alternations and depend on the final phoneme of the root. There is only one primary vowel

alternation rule in Persian: **[** â → u / __#], as in *robâ → robu-d* 'stole.' The consonant alternations are as follows: **Sibilants to /x/**, as in navâz → navâx 'play an instrument'; **Bilabial Stop to /f/,** as in shetâb→ shetâf 'hurry'; **Approximant to /sh/,** as in pendâr → pendâsh 'assume'; **Nasal deletion or alternation pattern**, as in band → bas 'close' & gozin → gozi-d 'placed'; and finally, **Elsewhere alternation to /s/,** as in xiz → xâs-t 'get up.'

However, not all simple verbs show internal root changes. I also illustrate that verbs like 'cry' which have traditionally been analyzed as alternating, are in fact realizing archaic overt verbalizers, such as /s/, and /f/.

Chapter three argues for the concept of an acategorical root as discussed in Distributed Morphology in order to explain the need for the verbalizer position within the verbal construction. Here, I provide a unified analysis for all simple verbs, claiming that they are composed of a [√+ verbalizer]. This is a novel analysis of simple verbs in Persian, and has bearing on causative constructions discussed in chapter four.

Finally, chapter four incorporates the 'flavors of v' hypothesis within the Distributed Morphology framework to examine the underlying structure of simple verbs in Persian. In addition to illustrating that roots are acategorical in Persian and morphological causatives are formed by affixing the causative morpheme to the root, this chapter provides a unified analysis of all simple verbs and their causatives, illustrating that verbs with a vDO flavor have a volitional restriction on their subject that does not allow the subject to be demoted, leading to the blocking of the causative morpheme in these verbs.

1.4 Contributions of This Work

The novel proposal made here regarding the structure of Persian simple verbs not only contributes to the study of syntax and morphology of one of the Iranian languages, but also provides additional

evidence for the DM model and the concept of acategorical roots (Halle and Marantz 1993, Harley 2013), further attesting to languages sharing similar underlying features, defined as Universal Grammar.

The data in synchronic and diachronic change seen in these verbs reflects the speaker's subconscious awareness or categorization of complex structures and illustrates that in addition to a theoretical analysis that considers a complex structure, in practice, speakers also process these words as complex constructions. This is attested in chapter 4, where synchronic and diachronic change in the language has led the null verbalizer to be replaced with the overt verbalizer, or the LV in CPrs that are formed from these simple verbs. This study can also be expanded into the realm of masked priming experiments to observe how speakers of this language store and process simple verbs and their causative form, or how causative/non-causative alternating complex predicates are stored and processed (e.g., does *kard* 'do' prime TAMIZ SHOD 'clean become', or vice versa.) To my knowledge, studies like this in Persian have not been attempted[4]. A drawback of such a study, and something that will have to be overcome, is that masked priming experiments are designed for subjects to respond to a single word. Complex predicates in Persian, while they may have properties of a single word (see Shabani-Jadidi 2012), are in fact, two separate elements in terms of written form and syntactic processing[5]. Given the linearity of the speech stream, this is a large hurdle to overcome in the test design, but an exciting challenge nonetheless.

[4] Pouneh Shabani-Jadidi's (2012) work in lexical priming is a goal post to work from, as it is the only experimental work provided on Persian CPrs. However, her work is analyzed within the lexicalist framework, which looks at complex predicate verbs from the perspective that they are stored and accessed as whole units, which in turn makes different predictions about the data. An experiment on Persian verbs within the DM framework has not yet been attempted.

[5] Another major shortcoming in studies regarding Persian, is that there are no databases that provide helpful word frequency information. Also, work on word etymology in Persian is absent from the overall literature.

It goes without saying, that the findings here can be implemented in pedagogy, and teaching Persian as a second language, as it provides a learnable pattern of verb forms whether concerning the type of alternation the root undergoes, or whether the verb blocks the causative form or not.

1.5 Notations, Glosses and Abbreviations

Persian is written from right to left in Arabic script. Standard IPA orthography is used in this work, with a few exceptions. Instead of transcribing examples with /ʃ/, ش, and /G/ or ق, as in /*Gaʃang*/ 'pretty', I follow Persian Romanized orthography, which represents them as /sh/ and /gh/ respectively (e.g., *ghashang* 'pretty'). I represent the long front vowel as /â/. Hyphens are used to represent morpheme boundaries. The past tense morpheme is represented as underlying /d/, that assimilates in voicing depending on its preceding environment. Verbs in Persian are represented in their infinitive form, which is the *masdar-e morraxam* (shortened stem) form plus the infinitive affix *–an* (e.g., *raft-an* 'to go'). The verbs in this work are presented in the shortened form. Within the glosses, the following abbreviations are used: SG= singular; PL=plural; 1=first person; 2= second person; 3= third person; ACC= accusative; NOM=nominative; PST = past; CAUS=cause; vrblz = verbalizer; NEG= negative; PASS= passive; DEF= definite; INDF= indefinite; INF= infinitive; RA= ra, specificity, object marker in Persian; EZ= ezafeh morpheme; NMLZ= nominalizer.

CHAPTER TWO: VERBALIZERS IN PERSIAN SIMPLE VERBS

2.1 Introduction

The focus of this chapter and the next is the internal construction of simple verbs in Persian. In this chapter, I analyze the alternating simple verbs in Persian and illustrate that these simple verbs are complex, and contain a null little-v. I show the past alternations to be systematic and triggered by the attachment of this null verbalizer when a root ends in a specific subset of phonemes. I begin my analysis of simple alternating verbs using the formal, archaic forms to demonstrate the systemic nature of these alternations, as there are only a small number of simple verbs in Persian (Karimi 1997, among others). However, most of these archaic forms are no longer in use. Once the pattern of the systematic alternations has been established, and a complete picture of simple verbs has been presented, the current colloquial past forms of the verbs will be provided briefly in 2.5 and in more detail in chapter 3 in order to illustrate that the analysis in this chapter, and the next makes the correct predictions regarding simple verbs in Persian.

I further argue that the root alternations in simple verbs are not inherent or triggered by the attachment of the past tense morpheme, but instead occur before the suffixing of the past tense by claiming the existence of a verbalizer position within the structure of simple verbs, in line with Folli & Harley (2006), Harley (2008), Key (2012). I show this verbalizer position to be filled with either an overt or null verbalizer. The most interesting finding in this chapter is the claim that the null past tense verbalizer triggers a set of alternations in the present stem to form the past stem. I show these alternations to be systematic and predictable, and further compatible with the set of *pseudo infinitives* mentioned in (1a), and discussed in chapter 3.

Persian has two types of verbal predicates: simple (heavy), as in (1a-b), and complex predicates (CPrs), as in (2), made up of a 'light' verb (LV), itself a simple verb in its own right, and a nonverbal element (NVE). CPrs will not be discussed in this chapter.

(1) Simple verbs

a. raghs-id	-ø	b. sux -t	-ø
dance-pseudoinf.	-3sg	burn-PST	-3sg
'(he/she) danced'		'(it) burnt'	

(2) Complex Predicate

tamiz kard	-ø
clean do.pst	-3sg
'cleaned'	

The simple verbs appear to be categorized into two types by traditionally being analyzed as either having a verbal stem, which may have past and present alternants, as in (3), or as non-alternating nominals taking the derivational *pseudo-infinitive* morpheme, *-id*, as in (4) (Bateni 1969, Khanlari 1973, Karimi 1996, among othes). The *–t* and *-d* affixes in the examples in the second column in (3) represent the past tense morpheme, while the affix, *-id*, in (4) is the *pseudo-infinitive* morpheme. I discuss the *pseudo-infinitive* morpheme and the literature on simple verbs in detail in chapter three.

(3)

present	past	Meaning
rav	raf**-t**	'go'
robâ	robu**-d**	'steal'
xor	xor**-d**	'eat'

(4)

present	past	Meaning
raqs	raqs**-id**	'dance'
dozd	dozd**-id**	'steal'

At first glance, the changes that occur in the past/present alternating stems appears to be random, as seen in (5)[6].

[6] The past tense affixes, *-t/-d*, have been removed for the past stems to focus on the different alternations. While there is a generalization regarding the attachment of the tense morpheme, I show in section 3 that tense is not responsible for the root alternations.

(5)	Present tense	Past tense	Meaning
a.	rob**â**	rob**u**	‘steal’
b.	ârâ	ârâ**s**	‘beautify’
c.	sep**â**r	sep**o**r	‘bestow, entrust’
d.	gozâ**r**	gozâ**sh**	‘allow, place’
e.	gozi**n**	gozi	‘placed’
f.	nesh**in**	nesh**as**	‘sit’
g.	dân	dân**es**	‘ know’
h.	ba**nd**	ba**s**	‘close’
i.	xor	xor	‘eat’
j.	pazir	pazir**of**	‘accept’
k.	r**u**	r**os**	‘grow, sprout’
l.	g**u**	g**of**	‘say’
m.	shek**â**f	shek**â**f	‘split’
n.	shek**o**f	shek**o**f	‘bloom’
o.	sh**u**, sh**ur**	sho**s**	‘wash’

The stem alternating class of simple verbs in (5) show a variety of different alternation options, which do not appear to be systematic. For example, a stem alternation might occur in the vowels regardless of adjacency to the past tense morpheme, as in (5a) and (5c), but not in (5b). A stem ending in /r/ could undergo a variety of alternations, as noted in (c), (d), (i), (j), and (n).

These alternations cannot be predicted by way of the tense morpheme. While there are more verbs with the voiceless alternation of tense, *-t*, as opposed to the voiced version, *-d*, the environments for attachment are difficult to predict based on their present form, as noted in (6-7)[7]. Note the similar environments in the present tense verbs when comparing (6a) to (7a), (6b) to (7b), etc.

(6)	Past tense –t attachment			Translation
a.	pend**âr**	→	pendâsh-t	‘assume, imagine’
b.	g**ard**	→	gash-t	‘search’
c.	paz**ir**	→	pazirof-t	‘accepted’
d.	nesh**in**	→	neshas-t	‘sit’

(7)	Past tense –d attachment			Translation
a.	fesh**âr**	→	feshor-d	‘press, squeeze’
b.	b**ar**	→	bor-d	‘take’
c.	m**ir**	→	mor-d	‘die’

[7] The examples in (5) are provided to show the variety of different phonological alternations available based on the final phoneme of the root. The comparison between examples (6) and (7) are provided to show that, aside from voicing assimilation, the tense affix does not assist in predicting the alternation that occurs in the stem.

d. afar**in** → afari-d 'create'

What triggers root allomorphy? Are the specifications for the root alternation dependent on the past tense suffix? If not, is there any other way to predict a pattern?

This section presented the puzzle regarding simple past/present stem alternating verbs. Section 2.2 presents the data, and includes the observational generalizations regarding the past forms of these verbal stems, while 2.3 presents the available alternations to the root and 2.4 illustrates any additions to the root. Two possible hypotheses, in line with the current literature, and their counter arguments are presented in section 2.5. Section 2.6 presents the analysis of simple alternating verbs, the rules that are applied to form the past stem, and other additions to the root not considered to be the *pseudo-infinitive* morpheme. Section 2.7 concludes this chapter.

2.2 Data

The following Table lists the formal form of 83 past/present stem alternating simple verbs in Persian (taken from Bateni 1969)[8]. Bateni claims these stems undergo "phonetic" change to result in the past stem and take either [a:d, id[9], t, d] as a past tense suffix (1969:182). I have transcribed and translated these verbs from Persian, and organized them by initial phoneme in Persian alphabetical order. The second column shows the past tense suffix separated from the stem for the purposes of this analysis.

[8] Bateni (1969) presented these verbs in no specific order. I have organized these verbs by Persian alphabetical order while transcribing them into English.

[9] Bateni is referring to alternating verbs ending in *–id*, and not the *pseudo infinitive* morpheme discussed in (1a), in which the stem doesn't undergo any change. In *âfari**n**/ âfari-d* 'created', /i/ is part of the root and the /n/ disappears from the past tense form. Whereas, the *pseudo infinitive* form *raghs/raghs-id* 'danced' has no /i/ in the present tense root, and shows no alternation occurring on the stem.

Table 1. List of Past/Present Alternating Stems[10]

Present tense form	Verb in Past tense form	Meaning
A		
âmuz	âmux-t	'learn, teach'
âmiz	âmix-t	'mix'
andâz	andâx-t	'drop, throw'
âzâr	âzor-d	'bother'
âsâ	âsu-d	'lounge, relax'
anduz	andux-t	'store'
afruz	afrux-t	'ignite, kindle'
angiz	angix-t	'cause, motive'
âviz	âvix-t	'hang'
âzmâ	âzmu-d.	'teach'
-------	âshof-t	'agitate, disturb'
afzâ	afzu-d	'increase'
âlâ	âlu-d	'make dirty'
afrâz	afrâx-t	'uphold, erect'
afrâz.	afrâsh-t	'lift, upraise, hoist'
âfarin	âfari-d	'praise, to create'
â	âma-d	'come'
ârâ	ârâs-t	'beautify'
B		
bar	bor-d	'take'
bâz	bâx-t	'lose'
biz	bix-t	'refine, screen, sift'
bin	di-d	'see'
bâsh	bu-d	'be'
band	bas-t	'close'
P		
peivand	peivas-t	'connect, attachment'
pazir	pazirof-t	'accept'
paz	pox-t	'cook'
pardâz	pardâx-t	'spend'
peima	peimu-d	'travers, to cover'
pendâr	pendâsh-t	'assume, imagine, suppose'
T		
tâz	tâx-t	'gallop'
tavân	tavânes-t	'ability, can'
J		
ju.	jos-t	'search'
jah	jas-t	'jump'
CH		
chin	chi-d.	'collect, gather'
X		
xiz	xâst	'stand, get up'
D		
dâr	dâsh-t	'have'

[10] The verbs presented in this table are all formal forms; While some verbs are still in use in the simple form, some verbs in this list are considered archaic and no longer in use. For example, *âshoft* 'disturb' is now *barâshoft*, and *xiz/xâst* 'get up' are now *barxiz* and *barxâst*. As mentioned, the current, colloquial and/or CPr forms are provided in appendices A-C.

dân	dânes-t	‘know’
duz	dux-t.	‘sew’
R		
ru	ros-t	‘grow, sprout,
rav	raf-t	‘go’
rub	rof-t	‘sweep, to wipe'
ris	resh-t	‘spin’
robâ	robu-d	‘steal’
riz	rix-t	‘spill’
Z		
zan	za-d	‘hit’
S		
sâz	sâx-t	‘fix’
suz.	sux-t	‘burn’
sepâr	sepor-d	‘bestow, entrust’
setâ	sotu-d	‘bestow’
sarâ	soru-d	‘sing’
SH		
shomâr (shemâr)	shomor-d (shemor)	‘count’
shenâs	shenâx-t	‘know, recognize’
shekâf	shekâf-t	‘split’
shekof	shekof-t	‘blossom’
shu	shos-t	‘wash’
shekan	shekast	‘break’
shetâb	shetâf-t	‘hurry’
F		
farmâ	farmu-d	‘ordered, said, decree’
forush	forux-t	‘sell’
farib	farif-t	‘trick’ (farib xord/zad)
feshâr	feshor-d	‘press, apply pressure’
K		
kâr	kâsh-t	‘plant’
kâr	kesh-t	‘cultivation, planting, tilling’
kah	kâs-t	‘decrease, whittle’
kon	kar-d	‘do’
kub	kuf-t	‘pound’
G		
goshâ	goshu-d	‘open’
gozâr	gozâsh-t	‘let, to put’
gozar	gozash-t	‘pass’
gozin	gozi-d	‘placed’
gosel/gosal	gosix-t	‘break off, rupture
gard	gash-t	‘search’
gomâr	gomâsh-t	‘appoint, nominate’
godâz	godâx-t	‘fuse, to melt’
goriz	gorix-t	‘escape’
geri	geris-t.	‘cry’
gosal/ gosel	gosas-t	‘partition’
gu	gof-t	‘say’
gir	geref-t	‘get’
M		

mir	mor-d	'die'
N		
negar	negaris-t	'look, behold'
navâz	navâx-t	'play an instrument'
neshin	neshas-t	'sit'

There are many inconsistencies in the alternations above, making an analysis difficult. For example, in some verbs we see one or more vowel alternation, (8a), while in others there is also an additional alternation to the final consonant of the root, (8b).

(8) a. setâ → s**o**t**u**-d 'bestow' b. p**az**→ p**ox**-t 'cook'

In some cases, the final nasal, /n/, is deleted in the past tense, while in other /n/ final verbs, an *-es* is added before the past tense suffix, as seen in (9a-b).

(9) a. za**n** → za-d 'hit' b. dân → dân**es**-t ' know'

In the subsequent section, I analyze the alternation environment for all 86 verbs, and separate the verbs into 6 categories depending on the nature of the alternation. The categories include: final /n/ deletion, vowel alternation, and a number of alternation in which the final consonant alternates to a voiceless fricative: /x/, /sh/, /s/, and /f/. I also discuss any additions to the root. A complete analysis of the past form alternations is presented in section 4.0.

2.3 Available Alternations

The verb alternations in Table 1 are the formal, archaic alternations and appear to be unpredictable. However, through a meticulous categorization of the stem alternations discussed below, I illustrate that these simple verbs are only utilizing a small set of alternations available to them, and are in fact showing systematic changes. A more detailed explanation of the analysis can be found in section 4. However, Tables 2-11 below demonstrate the general alternations that can occur in the present form of the root in order to form the past tense stem. To achieve the separate tables below, I separated *–t/-d* from the past form and compared the remainder of the past stem to the present

form. The present tense forms below are the result, organized according to what changes occurred in the past root form.

The set of verbs in Table 2 show /n/ deletion in the past tense. The preceding vowel before all but one example is /i/.

Table 2. /n/ Deletion

Present tense form	Verb in Past tense form	Difference noted in present form
âfarin ‘ praise, to create’	âfari	/n/ deleted from present form
chin ‘collect, gather’	chi	/n/ deleted from present form
bin ‘see’	**d**i	/n/ deleted from present form
gozin ‘placed’	gozi	/n/ deleted from present form
zan ‘ hit’	za	/n/ deleted from present form

Table 3. Internal Root Alternations: Vowel Alternations

Present tense form	Verb in Past tense form	Difference noted in present form
âzâr ‘bother’	âzor	â → o
âzmâ ‘teach’	âzmu	â → u
âsâ ‘lounge, relax’	âsu	â → u
afzâ ‘to increase’	afzu	â → u
âlâ ‘make dirty’	âlu	â → u
bar ‘take’	bor	a → o
peimâ ‘travers, to cover’	peimu	â → u
robâ ‘steal’	robu	â → u
sepâr ‘bestow, entrust’	sepor	â → o
setâ ‘bestow’	sotu	â → u & /e/ → /o/
sarâ ‘sing’	soru	â → u
shomâr/shemâr ‘count’	shomor/shemor	â → o
farmâ ‘ordered,	farmu	â → u
feshâr ‘press, apply pressure’	feshor	â → o
goshâ ‘open’	goshu	â → u
mir ‘die’	mor	i → o

Setting aside the diphthongs, the Persian vowel system consists of 6 vowels. All the verbs in Table 3, with the exception of two verbs, end in /â/, or /Vr/. One generalization appears to be that the vowel alternation process for the past tense stem mostly occurs in verbs that have a final /â/ vowel in the present stem. The exceptions to this are the roots for ‘die’ and ‘take’ which end in /r/, but show a vowel alternation nonetheless. The alternation, however, is consistent. The final vowel in a vowel-final stem alternates to /u/, while the final vowel in consonant ending stem alternates to

/o/ (i.e., the penultimate phoneme, any vowel, which happens to appear between two consonants: C_C). This is shown in the rules below.

(10) *The environment for the vowel change*

a. V → o /C_C b. â → u / __#

Table 4 below shows the list of final consonants that change to the voiceless velar fricative, /x/. The list of consonants that change to /x/ are: /z/, /s/, sh, and /l/. There are obvious generalizations to be made here. However, I will withhold formulating a rule at this point, as I account for all alternations in section 2.6 after presenting all the facts. For now, we will only assume the outcome, which is that the final consonant alternates to the voiceless fricative in the past tense.

Table 4. Internal Root Alternation: C# → /x/

Present tense form	**Verb in Past tense form**	**Difference noted in present form**
afrâz 'uphold, erect'	afrâx-t	z → x
afruz 'inginte, kindle'	afrux-t	z → x
âmuz 'learn, teach'	âmux-t	z → x
amiz 'mix'	âmix-t	z → x
andâz 'drop, throw'	andâx-t	z → x
anduz 'store'	andux-t	z → x
angiz 'cause, motive'	angix-t	z → x
âviz 'hang'	âvix-t	z → x
bâz 'lose'	bâx-t	z → x
biz 'refine, screen , sift'	bix-t	z → x
paz 'cook'	pox-t	z → x & a→ o
pardâz 'spend'	pardâx-t	z → x
tâz 'gallop'	tâx-t	z → x
duz 'sew'	dux-t.	z → x
riz 'spill'	rix-t	z → x
sâz 'fix'	sâx-t	z → x
suz. 'burn'	sux-t	z → x
godâz 'fuse, to melt'	godâx-t	z → x
goriz 'escape, flee'	gorix-t	z → x
navâz 'play an instrument'	navâx-t	z → x
shenâs 'know, recognize'	shenâx-t	s→ x
forush 'sell'	forux-t	sh → x
gosel/gosal 'break off, rupture	gosix-t	l→ x & either e→ i[11] or a→ i

[11] Both pronunciations are available (Mohsen Mahdavi, Personal Communication, 2017) For the purposes of this work, I will only discuss the *gosal* 'break off' pronunciation.

In Table 5 below, I list all alternations to /sh/. The consonant that alternates is usually /r/, but there is also an example of /z/ alternating to /sh/, as seen in the final example, *afrâz/ afrâsht* 'lift'.

Table 5. Internal Root Alternations /r/ → /sh/

Present tense form	Verb in Past tense form	Difference noted in present form
pendâr 'assume, imagine, suppose'	pendâsh-t	r→ sh
dâr 'have'	dâsh-t	r→ sh
kâr 'plant'	kâsh-t	r→ sh
kâr 'plant, to tilling'	kesh-t	r→ sh e→ â
gozâr 'let, to put'	gozâsh-t	r→ sh
gozar 'pass'	gozash-t	r→ sh
gard[12] 'search'	gash-t	r→ sh /d/ devoicing
gomâr 'appoint, nominate'	gomâsh-t	r→ sh
afrâz 'lift, upraise, hoist'	afrâsh-t	z → sh

Table 6 below, includes all alternations to /s/. The group of phonemes that alternate to /s/ are /n/, /r/, /h/, /l/, and /z/. Again, the rules of alternation will be discussed in section 2.6.

Table 6. Internal Root Alternations: C# → /s/

band.	'close'	bas-t	n→ s /d/ devoicing
peivand	'connect, attachment'	peivas-t	n→ s /d/ devoicing
shu or shur	'wash'	shos-t	r→ s
jah	'jump'	jas-t	h→ s/__#
kah	'decrease, whittle'	kâs-t	h→ s/__#
shekan	'break'	shekas-t	n → s
neshin	'sit'	neshas-t	n → s & i → a
gosal/ gosel	'partition'	gosas-t	l→ s
xiz	'awake, get up, rise'	xâs-t	z→ s & â → –i-

Table 7 below shows all stems ending in /b/ that alternate to /f/.

Table 7. Internal Root Alternations: C# → /f/

Present tense form	Verb in Past tense form	Difference noted in present form
shetâb ' hurry'	shetâf-t	b→ f/_#
farib 'trick' (also farib xord/zad)	farif-t	b→ f/_#
kub 'pound'	kuf-t *(there is also kubid)*	b→ f/_#

Besides a change in voicing, the resulting phoneme is now a fricative. Given that there are no exceptions in Table 7, we can generalize a rule like (11) for the present stem; however, I will not focus on specific alternations, rather the more general trends seen across all simple verbs.

[12] For reasons that will be made clear in section 4, I've included *gard* 'search' in this set of verbs. The same goes for *band* 'close' in Table 8.

(11) [+voice, bilabial stop] →[- voice, labiodental fricative]/ __# [13]

Up to this point, I have focused on the archaic forms to analyze the possible alternations to the stem. For the following Table, I make an exception, to show that the colloquial forms also follow the general pattern observed in the formal forms. Table 8 consists of verbs from the alternating list in Table 1, where I claim either the alternation is vacuous, or the predicted form is only expressed colloquially.

Table 8. Other Alternations

Present tense form	**Verb in Past tense form**	**Difference noted in present form**
âr 'bring' *collq. âvar*	âvar-d collq. âvor	(â → o) i.e. âvor-d , collq. expressed
xor	xor-d	V→ /o/ / C_C (vacuous alternation)

The first stem, *âr* 'bring,'and its past form show a unique, mysterious addition. However, if we note the colloquial form, *âvar/ âvor* 'bring' we can observe the vowel alternation, V→ o/C__C. The same goes for *xor* 'eat,' which could easily be considered to have a vacuous alternation, as it already contains an /o/ in the present form. Tables 1-8 illustrate all the changes that can occur to present stems. In the next section, I will discuss other possible alternations in the stem.

2.4 Possible Additions to The Root

While we saw that some simple verbs show an internal change in the root when forming the past tense, still others appear to have phonemes added to the root. The summary of this section is as follows: Tables 9 & 10 show the addition of /s/ and /f/ to the present root forms respectively, while Table 11 provides a list of irregular alternations that don't appear to have a pattern. In the 7 verbs in Table 9, the alternation to the root consists of the addition of /s/ before the tense morpheme. In other words, *-s* is added to present stems ending in [â, ân, ar, u, i]. We also see the addition of a vowel in some of these verbs, such as *dân* 'know', *tavân* 'can,' and *negar* 'behold.' Given the

[13] /b/ becomes + cont, + strident, - voice. There are no exceptions to this rule. However, I refrain from discussing specific rules at this point as the environment of alternation has not been established just yet.

phonotactics of Persian, certain consonant clusters are disallowed, opening the way for a vowel insertion,[14] (e.g., *nst, *rst). The features of the inserted vowels are not consequential to this work, and will not be analyzed. Suffice it to say, that a vowel is added if the stem ends in a consonant. In Table 9, *-s* is added to verbs that end in one of following possibilities: [â, ân, ar, i, u].

Table 9. Addition of /–s/

Present tense form	Verb in Past tense form	Difference noted in present form
ârâ 'beautify'	ârâ**s**-t	∅ → s/ __ #
tavân 'ability, can'	tavân**es**-t	∅ → es/ __ #
dân 'know'	dân**es**-t	∅ → es/ __ #
geri 'cry'	geri**s**-t.	∅ → s/ __ #
negar 'look, behold'	negar**is**-t	∅ → is/ __ #
ru 'grow, sprout, escape'	ro**s**-t	∅ → s/ __ # & final vowel u→ o
ju. 'search'	jo**s**-t	∅ → s/ __ # & final vowel u→ o

Moreover, *-f* is added to a number of roots, as seen in Table 10 below. These stems end in [u, and ir]. Note that in the top two verbs 'accept' and 'get', a vowel is epenthesized to avoid *rft cluster.

Table 10. Addition of /f/

Present tense form	Verb in Past tense form	Difference noted in present form
pazir 'accept'	pazir**of**-t	-of (VC) added
gir 'get'	g**eref**-t	-ef (VC) & i→ e
ru 'sweep, to wipe'	ro**f**-t	+ f & u→ o
gu 'say'	go**f**t	+f & u→ o

Finally, Table 11 Shows a list of irregular present/past alternations.

Table 11. Irregular Root Alternation

Present tense form	Verb in Past tense form	Difference noted in present form
ris 'spin'	resh-t	i→ e & s → sh
kon 'do'	kar-d	o→ a & n→ r
â 'come'	âma-d	/ma/ added
r 'go' collq. rav	raf-t	v→ f
sh 'become' collq. shav	sho-d	---

Not including the irregular changes in Table 11, all the alternations discussed so far have been compiled in Table 12, which summarizes the alternations found above into a more condensed chart.

[14] There are only 5 verbs that have vowel epenthesis preceding *-s*, or *-f*. (Two verbs, one with vowel [e] and [o] preceding -f and 3 verbs with [e] or [i] preceding -s) Given that there aren't enough verbs with vowel epenthesis, the feature & environment of these vowels have not been analyzed.

On the left, we see all types of alternations and deletions that occur in the root to form the past stem. As seen in items d. and e., /l/ can alternate to either /s/ or /x/, and /z/ can alternate to either /sh/, /s/, or /z/, seen in items c., d., and e. respectively. On the right side, we see anything that can be added to the root, not including the past tense suffix, of course.

Table 12. Types of Alternations to the Root

Possible alternations to the root	**Possible additions to the root** *(Not including tense affix)*
a. â→ u/ __#	i. â
b. â, i, a, u, e→ o/ C__C	j. (V)s (Vowels: e, i)
c. r, z→ sh/_(C)[15]#	k. (V)f (Vowels: e, o)
d. n, h, l, r, z→ s/_(C)[16]#	
e. z, s, l, sh → x/_C#	
f. b→ f/__#	
g. n→ ∅/_#	
h. d→ ∅/_#	

The table above only shows the changes that occur to the simple verb roots, but doesn't say anything about the environments in which they occur. By including which changes occur preceding which version of the tense morpheme, we can check for overlapping changes. For example, we see, /z/ alternating to /sh/ and /x/ respectively in *afrâz/afrâ**sh**-t* 'lift' and *afrâz/afrâ**x**-t* 'uphold,' and alternating to /s/ in *xiz/xâs-t* 'get up;' however, all these alternations precede the voiceless tense morpheme *–t.* Checking for this overlap, we appear to have a generalization where, with a small number of exceptions, Table 13 is an awkward but accurate description of changes.

Table 13. Root Alternations Organized by Past Tense Suffix

Alternations for roots that take past tense –d	**Alternations for roots that take past tense -t**
a. â→u/ _#	a. r,z→ sh
b. â, i, e, a, u→ o /C_C	b. n, h, l, r,z→s
c. n→ ∅	c. z,s,l,sh →x
d. + â (in oft- â-*d*, and ferest- â-*d*)	d. b→f
	e. d→ ∅ (e.g. band/bas)
	f. +(V)s
	g. +(V)f

[15] /r/ in *gard* 'search' alternates to /sh/ although it is not the final consonant of the stem.

[16] /n/ in *band* 'close' alternates to /s/ although it is not the final consonant of the stem.

	h. u, â→ o (e.g. gu/gof) i. o→ a (e.g. kon/kar) j. â,i →e (e.g. gir/geref)

It would appear that all the devoicing alternations, consonantal additions, and some vowel alternations and deletions occur with the voiceless version of tense, while the voiced version of tense only occurs with vowel alternations, /n/ deletion, and vowel insertion.

2.4.1. Does the Tense Suffix Play a Role in The Root Alternations?

While it would seem that each tense morpheme triggers a different set of alternations, recall example (5), presented again as (12) below, where the environments for the attachment of *–d* and *–t* were the same (i.e., looking at the present stems, we can't predict which version of tense will appear on the past stem). This indicates that there is more to the story than simply assuming tense plays a role in triggering the root alternations.

(12)

Past tense –t attachment		*Past tense –d attachment*	
pend**âr**→ pendâsh-**t**	'assume, imagine'	fesh**âr** → feshor-**d**	'press, squeeze'
g**ard** → gash-**t**	'search'	b**ar** → bor-**d**	'take'
paz**ir** → pazirof-**t**	'accepted'	m**ir** → mor-**d**	'die'
nesh**in** → neshas-**t**	'sit'	afar**in** → afari-**d**	'create'

It cannot be that the voiceless and voiced tense morphemes trigger different changes, as they would each have to carry distinctive features that then trigger different changes on the root. In order to address these questions, I discuss two competing hypotheses in the next section.

2.5 Competing Hypotheses

As discussed in the previous section, it is difficult to predict what environment would determine the alternation, as seen in example (5) and (12) and repeated again here.

(13)

Past tense –t attachment		*Past tense –d attachment*	
pend**âr**→ pendâsh-**t**	'assume, imagine'	fesh**âr** → feshor-**d**	'press, squeeze'
g**ard** → gash-**t**	'search'	b**ar** → bor-**d**	'take'
paz**ir** → pazirof-**t**	'accepted'	m**ir** → mor-**d**	'die'
nesh**in** → neshas-**t**	'sit'	afar**in** → afari-**d**	'create'

In the following two subsections, I discuss two possible hypotheses regarding root alternation in simple verbs. The first, which is also the traditional hypothesis assumed in the literature (Bateni 1969, Dabir-Moghaddam 1982, among others), assumes that the tense morpheme triggers the root alternation, while the second assumes the opposite: that root alternation initiates the voicing of the past tense suffix. Both assumptions are followed by a favored alternative analysis in 2.6, where a more complex structure is assumed. I will also discuss why I reject the possibility that the two forms, past and present, exist independently.

2.5.1 Hypothesis A: Tense Suffix Triggers Root Alternation

The first hypothesis to address is that the specifications for the change exists in the past tense suffix. The concept here, is that each version of the past tense morpheme triggers different changes in the root. Table 13 (presented again here as Table 14) hinted at this being a possibility, as the overall alternations did appear to be different for each tense suffix. This is the most appealing hypothesis, but has empirical flaws, mainly because both tense morphemes are shown to attach in similar environments, as seen in (13).

Table 14. Root Alternations Organized by Past Tense Suffix

Alternations for roots that take past tense –d	Alternations for roots that take past tense -t
e. â→u/ _#	k. r,z→ sh
f. â, i, e, a, u→ o /C_C	l. n, h, l, r,z→s
g. n→ ∅	m. z,s,l,sh →x
h. + â (in oft- â-*d*, and ferest- â-*d*)	n. b→f
	o. d→ ∅
	p. +(V)s
	q. +(V)f
	r. u, a→ o
	s. o→ a
	t. â,i →e

Firstly, this hypothesis assumes that the tense morphemes *–d* and *–t* have different features and trigger different alternations. The fundamental flaw with this assumption is that we now don't know what constitutes the selectional criteria for each tense morpheme before it attaches. If each

tense morpheme indeed triggers different root alternations, what mechanism and rules are used to choose which tense suffix is selected? It can't be a case of 'morphologically conditioned allomorphs,' as they would be conditioned by two arbitrary lists of roots. It can't use the present tense forms in (13-14) as cues, as both tense suffixes can attach to similar environments. It also can't rely on the past tense form, as under this assumption, the choice of tense is responsible for root alternations, so the alternations themselves cannot be used as environments to decide tense attachment. Moreover, this assumption would assume that the intuitive idea that there is one underlying form for the tense morpheme, which only changes voicing according to its environment, is false. (14) offers a clearer picture of the fact that the past tense stem, *-t/-d*, does not trigger the stem change.

(14)

	Present tense		*Past tense*
a.	rob**â**	'steal'	rob**u**-d
b.	ârâ	'beautify'	ârâ**s**-t
c.	sep**â**r	'bestow, entrust'	sep**o**r-d
d.	gozâ**r**	'allow, place'	gozâ**sh**-t
e.	ba-**nd**	'close'	ba**s**-t
f.	gozi**n**	'placed'	gozi-d
g.	nesh**in**	'sit'	nesh**as**-t
h.	pazir	'accept'	pazir**of**-t
i.	m**i**r	'die'	m**o**r-d
j.	r**u**	'grow, sprout'	r**os**-t
k.	g**u**	'say'	g**of**-t

Secondly, under this assumption, there doesn't appear to be a pattern to explain situations like (15), below, where the same environment (all taking the *–t* suffix) show different alternations. (15) shows cases where the attachment of *–t* results in different types of alternation within the same preceding environment. (15a-b) shows the addition of other consonants and vowels, (15c-d) show alternation of /r/ to /sh/ and /s/ respectively. And (16) is an example of the stem undergoing vowel

alternation instead of altering the final /r/ phoneme. Additionally, the stem in (16) takes the voiced version of the past tense suffix instead of the voiceless version.

(15) –t attachment to roots ending in /r/

a.	pazi**r**	pazi**r**of-t	'accept'	add -of	+t/tense
b.	nega**r**	negari**s**-t	'look on'	add –is	+t/tense
c.	gozâ**r**	gozâ**sh**-t	'allow, place'	r→ sh	+t/tense
d.	shu**r**	sho**s**-t	'wash'	r→ s	+t/tense

(16) *–d attachment to roots ending in /r/*

e.	ba**r**	bo**r**-d	'take'	∅	+d/tense

Finally, vowel alternations are not limited to the *–d* suffix; they still occur with the past tense suffix *–t,* and regardless of getting an added consonant to the root:

(17)

	present	*past*	*translation*
a.	ru	r**o**s-t	'grow'
b.	ju	j**o**s-t	'search'
c.	gu	g**o**f-t	'say'

Upon reviewing the data above, one thing is certain, there is no way to justify an alternation based on the tense morpheme since the same root environment triggers changes that end up using one of the two tense morphemes. Now that we have confirmed that the tense morpheme cannot be responsible for the root alternation, let us take a look at the second hypothesis.

2.5.2 Hypothesis B: Root Alternates Occurs Before Past Tense Morpheme Suffixes

The alternative hypothesis to the first one in 2.5.1, is that the root alternation either occurs before the attachment of the tense suffix, or that two stem forms, past and present, exist independent of environment. This hypothesis would assume the past/present forms are not alternations, but are independent suppletive forms that don't follow a systematic pattern. While assuming suppletive forms may be relevant to a subset of simple verbs like *bud/hast* 'was, is' it will not be explored further, as it not only unnecessarily puts the burden on the lexicon, it also dismisses the systematic pattern of alternations observed in this work.

Under an analysis where an arbitrary change in the root dictates what voicing feature will show up in the past tense suffix, it would be quite easy to predict[17] when the past tense morpheme will appear as a *–t* or a *–d* on the stem, since the alternation would have already taken place. However, such an analysis would say *nothing* about the changes that occur in the root: what triggers the alternation in the first place, why do some verbs with similar environments show no alternation at all (e.g., *xor/xord* 'eat'), and why do we see so many different alternations on the final phoneme of the root preceding the past tense suffix (e.g., roots ending in /r/ show different alternations preceding *-t*)? Furthermore, there isn't any known element that explains what triggers the choice of vowel alternation, or consonant alternation (e.g., some final vowels do not alter. Instead, a consonant is added, as in *ârâ/ârâs-t* 'beautify'). Additionally, what criteria is used to select the consonants that are added to the past tense stem (e.g. *–s* in *geri/geris-t* 'cry' or *–f* in *ru/roft* 'sweep')?

While at first glance, it would seem that the past tense suffix simply alternates in voicing depending on its environment (i.e., past root form), such an assumption falls short in theory: given all the possible alternations discussed in (14) and (15), assuming the alternations occur independently and without a pattern, or that they simply both exist as suppletive forms disregards the simpler explanation. In the next section, I will propose an alternative analysis.

2.6 Analysis

To deal with the observations made above, I present an analysis in line with (Folli and Harley 2005, Key 2012, among others), claiming that simple verbs in Persian have verbalizers. In essence, <u>*all*</u>

[17] Concerning different avenues of analysis regarding English strong verb alternations, see Halle and Marantz (1993, 1994) for semi-systematic phonological readjustment rules, vs. Siddiqi (2006) for a more lexical-ish storage of the different alternants.

simple verbs are more complex than first imagined. I propose that an intervening morpheme, a verbalizer, exists between the root and the tense, as in (18).

(18) *Past tense simple verb structure*
d. [√ + verbalizer] + tense
e. [suz + -∅] => *sux* +t 'burnt,'
f. [afzâ +-∅] =>*afzu* +*d* 'increased'

In this section, I argue that a null past tense verbalizer triggers internal changes to the root[18], and I show this change to be systematic and predictable. I further claim there are three more overt past tense verbalizers in Persian, shown in (19), two of which will briefly be discussed in this chapter: -*s* and –*f,* while the third overt verbalizer, -*i*-, is discussed in chapter 3.

(19)	Past tense verbalizers	Alternations
	a. <u>*Overt verbalizers*</u>	
	-i-, -s-, -f-	Do not trigger root alternations
	b. Covert verbalizer	
	$-\varnothing^{+past}$	Triggers root alternations[19]

Now that I have introduced the existence of a null verbalizer within the simple verb construction, we can look at the alternations again with the knowledge that a covert morpheme is interfering between the tense suffix and the root form in the past tense forms. I discuss all the alternations below, claiming that the null verbalizer is responsible for the alternations seen in these simple verbs. The alternations are discussed below, and can be separated into two main types of alternations: primary and secondary. The primary alternation includes consonant alternations, and final vowel change. If the roots contain any of the specified features (e.g., sibilant, approximant, etc.), the alternation is initiated in the presence of the null past tense verbalizer. The secondary alternation, is the penultimate vowel alternation to /o/, which may occur in conjunction with a

[18] There is also a null present tense verbalizer: $-\varnothing^{-past}$ that does not trigger alternation, which I claim to exist given the observations made in chapter 3.
[19] The uniqueness of zero morphemes with respect to allomorphic alternations is highlighted by Embick (2010).

primary alternation, and in some cases where an overt verbalizer is added. The secondary alternation appears to be somewhat optional, as discussed in 2.6.1 below.

2.6.1 Vowel Alternations

One possible alternation available to the stem is "vowel change." As noted in the rule in (10), section 2.5, and repeated here, in (20), there are two vowel alternations available to the root.

(20) *The environment for the vowel change*

a. V → o /C_C

b. â → u / __#

According to the data, internal vowel changes most notably occurs in verbs ending in /â/. /â/ always alternates to /u/ if it is the last phoneme of the root. However, a secondary vowel alternation is available. This alternation occurs in vowels between consonants (not immediately followed by the tense morpheme). I categorize this alternation to /o/, as a secondary alternation. It appears in conjunction with additions to roots that have the CV structure in the present tense *gu/goft* 'said', it occurs in some vowel alternation stems *seta/sotud* 'bestow', and in some roots that have undergone consonant alternation *paz/poxt* 'cook.' In essence, a null verbalizer triggers either primary or secondary alternations or both.

2.6.2 Consonant Alternations

'Consonant alternation' is the other primary alternation available to roots. All consonantal changes culminate in [x, f, s, or sh]. Interestingly, the changes are very systematic. Each is explained below. Exceptions to each are explained in section 2.6.2.6.

2.6.2.1 Sibilants to /x/

The list of roots that end in either /s, z, or sh/ alternate to the voiceless velar fricative /x/. These phonemes can be categorized as 'sibilants.'

(21)

present	*past*	*meaning*	*alternation*
a. navâz	navâx	'play an instrument'	z → x
b. shenâs	shenâx	'know, recognize'	s→ x
c. forush	forux	'sell'	sh → x

When a simple verb ends in a sibilant, the null verbalizer triggers the past form alternation, as seen in (22).

(22) navâz + $\varnothing^{+past}$ => navâx

2.6.2.2 Bilabial Stop to /f/

All roots ending in /b/ show an alternation to the voiceless bilabial fricative /f/ in the presence of the past tense verbalizer. There are no exceptions to this alternation.

(23)

present	*past*	*meaning*	*alternation*
a. shetâb	shetâf	'hurry'	$\varnothing^{+past}$, b→ f/_#
b. farib	farif[20]	'trick'	$\varnothing^{+past}$, b→ f/_#
c. kub	kuf	'pound'	$\varnothing^{+past}$, b→ f/_#

2.6.2.3 Approximant to /sh/

Most roots ending in /r/ alternate to a voiceless fricative /sh/. This change is also regular, and the exceptions easily explained, and discussed in 2.6.2.6.

(24)

present	*past*	*meaning*	*alternation*
d. pendâr	pendâsh	'assume'	r→ sh
e. dâr	dâsh	'have'	r→ sh
f. kâr	kâsh	'plant'	r→ sh

2.6.2.4 Nasal Deletion or Alternation Pattern

The more interesting pattern arises with verbs ending in /n/. When a root ends in /n/, the nasal is elided.

(25)

present	*past*	*meaning*	*alternation*
g. gozin	gozi-d	'placed'	n → ∅
h. zan	za-d	' hit'	n → ∅

[20] There is also a CPr form for this verb farib xord/zad 'trick eat/hit' forms which will be discussed in future work.

However, there is another /n/ alternation occurring in simple verb roots. This change is /n/ → s, where /n/ is not restricted to the final phoneme of the root. Examples of this change are verbs like *'band/bas-t* 'close'*,* and *peivand/peivas-t'* 'connect' but also *neshin/neshas-t* 'sit' and *shekan/shekas-t* 'break.' As I show in the following section, /s/ is the elsewhere alternation, so the choice of /s/ is not surprising. However, the options available to roots ending in /n/ can be explained using either of two approaches. Regardless of which set of internal rules the speaker uses, both work equally well, and have the same number of exceptions.

One approach is to assume that /n/ deletes when root final, while /n/ alternates to /s/ when another consonant follows it, as in (26).

(26)	Approach 1	Example	
a.	n → ∅/_#	zan/za	'hit'
b.	n → s/_C#	band/bas	'close'

There are two exceptions to this assumption. √*neshin* 'sit', which alternates to *neshas* and √*shekan* 'break,' which alternates to *shekas*. Both roots end in /n/, yet we see an alternation instead of deletion. The second approach is to assume that /n/ deletes when it is preceded by the high front vowel /i/, and /s/ is the Elsewhere alternation. This assumption culminates in a different set of exceptions, and is represented in (27).

(27)	Approach 2	Example
c.	n → ∅/i_#	âfarin/ âfari-d 'created'
d.	n → s/ Elsewhere	shekan/shekas-t 'broke

Here, we see two different exceptions. √zan 'hit' is an exception to (c), since /n/ is deleted preceding a vowel other than /i/. And √neshin is now an exception to the rule in (d), as /n/ does not delete preceding the high front vowel.

2.6.2.5 /s/ Elsewhere Alternation

Finally, I suggest that the alternation to /s/ is the elsewhere alternation. Both /h/ and /l/ alternate to /s/, a voiceless fricative, and they do not appear to have any features in common. Although, alternation in the opposite direction, /s/ to /h/, is more common cross-linguistically (O'Brien 2012)[21]. Additionally, when there is root homophony, as in (28), one of the roots' final consonant will alternate to /s/ instead.

(28)

	present	*past*	*meaning*	*alternation*	
a.	xiz	xâs-t	'get up'	z→ s	& â → i
b.	gosal	gosix-t	'break off, rupture'	l→ x /	& e/a→ i
c.	gosal[22]	gosas-t	'partition'	l→ s	
d.	jah	jas-t	'jump'	h→ s	
e.	xâh	xâs-t	'want'	h→ s	
f.	shu**r**	sho**s**-t	'wash'	r→ s	

2.6.2.6 Dealing with Exceptions

There appears to be a number of exceptions to the observations above. However, all are explainable following two basic assumptions: 1) The alternations occur due to changes initiated by the verbalizer. 2) Secondary alternations, or deviation from the primary alternation occurs to avoid homophony[23] with either another verb in the present or past form, or another lexeme in the language.

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[21] Debuccalization (i.e. when a consonantal phoneme changes place of articulation to the glottis) of /s/ to /h/ is more common and found in languages like Greek, Spanish, and Sanskrit (O'Brien 2012). In Indo-Iranian, a change occurred at some point, as we see the correlation between /s/ in the Latin stem ***s****ept* 'seven' and **h**aft 'seven' in Persian.

[22] The present forms for both 'break off' and 'partition' are homophonous and interchangeable according to online Persian dictionaries, Dehkhoda and Amid (Mohsen Mahdavi, Personal Communication), and can be pronounced *gosal* or *gosel.*

[23] Homophony avoidance may not be the entire story. However, for literature on homophony avoidance see Wedel et al. (2018), which is driven by a functional concern for homophony avoidance, Siddiqi (2004), and Haung and Siddiqi (2006) among others.

First, any time there is root homophony between two present form roots, one of the two roots will undergo one or more alternations. (29) clearly represents this issue.

(29)

	present	*past*	*meaning*	*alternation*
a.	kâr	kâsh-t	'plant'	r → sh
b.	kâr	kesh-t	'cultivate, to till'	r→ sh & â → e
c.	afrâz	afrâx-t	'up hold'	z→ x
d.	afrâz	afrâsh-t	'lift'	z→ sh
e.	gosal	gosix-t	'break off'	l→ x/ & a/e → i
f.	gosal	gosas-t	'partition'	l→ s

One might question how a root 'chooses' to undergo a different alternation, or wonder how it 'compares' its form to other similar verbs or lexemes before undergoing any change. However, a closer look at the meanings of each pair illuminates the situation as new verbs formed by way of semantic drift. For example, to *up hold* and *to lift* have similar connotations. The same with *partition* and *break off*[24]. Another scenario that I believe creates irregular changes in the root is a desire to avoid certain consonant patterns. For example, it would seem that the repetition of consonants like /x, sh/ are dispreferred when it comes to verbs.[25]

(30)

a.	xiz ' get up'	alternates to xâs-t	not *xVx
b.	shur 'wash'	alternates to shos-t	not *shVsh

And finally, a different alternation may occur to just avoid confusion with another lexeme in the past tense, as in (31).

(31)

Present/past	*meaning*	*homophonous lexeme avoided*
kâr/kesht	till (the soil)	kosht 'killed'
ris/resht	spin	rixt 'spilled'
xor/xord	eat	xosh 'happiness, happy'

[24] This is purely speculative at this point and a historical investigation would clarify which verbs appear first in each set. I would like to hypothesize that given my analysis, (29c), (29e) are the original verb forms, as they are showing the regular alternations for each specific consonant (i.e., z→ x would most likely come before an alternation like z→ sh would be selected.)

[25] Dispreferring repeated consonants could take precedence over homophony, as past form √xâs (28a) is homophonous with the root for 'want' √xâh/xâs (28e), and yet it is preferred over other possible forms (*xix 'nonword', *xox 'nonword', *xos 'nonword' *xis 'wet').

Therefore, one can argue that whether the homophony shows up in the present stem or the past, the grammar allows for a deviation from the usual alternation pattern.

In section two, I stated that Bateni (1996) claimed four past tense allomorphs for the stem alternating verb class: [-t, -d, -id, and – âd]. Contrary to this proposal, I argued that Persian only has two past tense morphemes *–t*, and *–d*. I showed the *–id* allophone to be an example of /n/ deletion appearing with the voiced version of past tense (e.g., âfarin/ âfari). In the following section, I discuss overt verbalizers that have been misanalysed as root alternations, and in 4.4. argue *-âd* to be an example of vowel epenthesis appearing with the past tense *–d*. Hence, rather than assuming 4 tense allomorphs, I argue for assuming a simple underlying past tense morpheme that alternates in voicing (i.e, *t/d*), a null verbalizer that initiates root alternations, and a set of overt verbalizers that I discuss below.

2.6.3 Overt Verbalizers

Within the list of verbs first introduced in Table 1., there were quite a few verbs that showed the addition of a consonant to the root in the past tense. The consonants added to these roots are *–s*, and *–f*, and there may or may not be vowel epenthesis to avoid certain consonant clusters.

(32)

	present	*past*	*meaning*	*alternation*
a.	ârâ	ârâ-**s**-t	‘ beautify’	+ s/ __#
b.	tavân	tavân-**es**-t	‘ability, can’	+ es/ __#
c.	geri	geri-**s**-t	‘cry’	+ s/ __#
d.	ru	ro-**s**-t	‘grow, sprout’	+s/ __#[26]

(33)

	present	*past*	*meaning*	*alternation*
e.	pazir	pazir-**of**-t	‘accept’	+of
f.	ru	ro-**f**-t	‘sweep, to wipe’	+f & u→ o
g.	gu	go-**f**-t	‘say’	+f & u→ o

[26] According to my analysis, the vowel change of /u/ to /o/ is due to having a homophonous root (i.e., *ru/roft* ‘shovel’). Additionally, all present form roots with a CV structure appear to undergo the secondary alternation and take a consonantal verbalizer.

Evidence that *–s* and *–f* should be treated as verbalizers comes from diachronic language change and causatives, which will be discussed more in depth later in chapter 4. Suffice it to say, when a simple verb with an overt verbalizer has a causative form (34c-d) or has a more commonly used complex predicate form (34a-b), the overt verbalizers, *-s* and *–f* disappear. (34a-b) show CPrs, while (34c-d) illustrate causative forms.

(34)	*Simple verb*	*Complex predicate/causative*	*meaning*
	a. geri-**s**-t	gery*e* kard cry do	'cried'
	b. ârâ-**s**-t	ârâ(*y*)*-esh* kard beautify do	'beautify'
	c. geri-**s**-t	geri-un-d	'made cry'
	d. ku-**f**-t	kub-un-d	'pound, beat'

2.6.4 Evidence from Verbs That End in Voiced/Voiceless Alveolar Stops: -t, -d

Given the discussion above, the attachment of the tense morpheme following the verbalizer can now easily be explained. The voiced and voiceless versions of tense are not of different natures to trigger different alternations in the root. Instead, the underlying form of the past tense affix suffixes following the verbalizer and after alternations to the root has taken place, and agrees in voicing according to its preceding environment. Interesting evidence for this comes from verbs that end in the same phonemes as the past tense suffix, namely verbs that end in either *–t* or *–d* in the past tense. These are discussed below.

When the root ends in the same phoneme as the underlying form of the past tense suffix, we see alternation in the phoneme preceding *–d* in the present root form.

(35)	*present*	*past*	*past tense suffix*	*meaning*
a.	ba**n**d	ba**s**	-t	'close'
b.	peiva**n**d	peiva**s**	-t	'connect'
c.	ga**r**d	ga**sh**	-t	'search'

The alternation of /n/ to a voiceless fricative (i.e, /s/) preceding /d/ in the present tense, (35a-b), allows the past tense suffix to devoice even though there is a voiced phoneme, /d/, intervening between the past tense morpheme and the alternating phoneme. The intervening voiced phoneme, /d/, is ultimately devoiced/dropped in these verbs, as it appears between two voiceless phonemes. (i.e., peivas-~~d~~+t). The same goes for (35c).

On the other hand, the only two 'alternating roots' that end in a /t/, (36), have the voiceless fricatives /f/ and /s/ as penultimate root consonants respectively. The null verbalizer triggers changes in roots that have one of the specifications I described above in section 2.4 (i.e., ending in a sibilant, approximant, bilabial stop, etc.). As it would appear, the roots in (36) do not have any of the consonant features described in section 2.4, hence the null morpheme is not able to trigger any alternations, and the underlying form of the past tense morpheme suffixes to the stem.

(36)	a. o**ft**	oft (â)_+d	'fall'
	b. fere**st**	ferest(â)+d	'send'

Contrary to what occurred to the verbs in (35), the verbs in (36) show a vowel epenthesis (i.e., insertion of *â* between the stem and the tense affix). I consider the vowel epenthesis to be an attempt to avoid illegal consonant clusters, and homophony between the past and present stems. Under this assumption, *oft* and *ferest* are evidence that the past tense morpheme doesn't always alternate in voicing depending on the preceding environment. Rather, if homophony will be created between the past and present forms, or an illegal consonant cluster is formed, a vowel is epenthesized. Put simply, â is epenthesized: 1) to avoid the clusters, such as t+t or t+d. 2) to allow for the past and present stems to be distinguishable: if no epenthesis were applied to (36), regardless of whether the past tense suffixes appeared as voiced or voiceless on these stems, their pronunciation would be indistinguishable to the listener from their present tense form (i.e., *oft+t* or *oft+d* would both be heard as *oft*.)

2.6.5 Underlying Forms

We now have a clearer picture of the problem: First, a null verbalizer initiates changes to the root depending on the features of the final phoneme (e.g., sibilants, approximants, bilabials and some nasals alternate to a voiceless fricative). Then, the underlying form of tense attaches following the verbalizer. Given evidence discussed in 2.6.4, I argue the voiced version to be the underlying form of the past tense affix which takes on the voicing properties of its preceding phoneme (i.e., the final phoneme of the root, as the verbalizer is null). Example (37) illustrates this.

(37)	**√**	**+ null verbalizer**	**+ past tense affix**	**past tense verb**
a.	robâ	+ ø ⇒ robu	+ d	= robu**-d** ‘stole’
b.	suz	+ ø ⇒ sux	+ d	= sux**-t** ‘burnt’
c.	forush	+ ø ⇒ forux	+ d	= forux**-t** ‘sold’
d.	shetâb	+ ø ⇒ shetâf	+ d	= shetâf**-t** ‘hurried’
e.	dâr	+ ø ⇒ dâsh	+ d	= dâsh**-t** ‘had’

This can be extended to the overt verbalizers as well.

(38)	**√**	**+ overt verbalizer**	**+ past tense affix**	**past tense verb**
f.	geri	+ s	+ d	= geris**-t** ‘cried’
g.	gu	+ f	+ d	= gof**-t** ‘said’

Finally, in order to account for the changes that occur in the subset of verbs that end in either the voiced or voiceless alveolar stops, *-t/-d*, I argued that a vowel is epenthesized between tense and the stem in verbs ending in a voiceless alveolar stop, *oftâd* ‘fell’, in order to distinguish between the past and present stems, while stems ending in a voiced stop, delete or devoice the *–d* to avoid forbidden consonant clusters.

2.7 Conclusion and Further Issues

In this chapter, I motived the existence of a [+past] null verbalizer that initiates changes to the root. I showed these changes to be systematic and predictable, and limited to certain phonemes in the root. I suggested that the past tense suffix does not trigger the root alternations, but takes on the voicing properties of the preceding environment as long no homophony or illegal consonant

clusters are formed. The outcome of this discussion is a unified analysis of simple verbs, such that simple verbs in Persian, regardless of being root alternating or not, are complex and have a verbalizer intervening between the root and the past tense suffix. However, not all simple verbs show internal root changes. Now that the existence of a little-v morpheme in simple Persian verbs has been explored, we can look at the second type of simple verbs, known in Persian literature as *pseudo-infinitives*. In the next chapter, I analyze simple verbs formed with the 'pseudo infinitive' (e.g., *raghs/raghs-id* 'danced', *dozd/dozd-id* 'stole'). These verbs show no internal change between the past and present forms, and have the overt verbalizer, *-i-,* touched on in section 2.4.

A few things were not explained in this chapter. The irregular verb *â/ âmad* 'come' was not discussed, as it is completely unique. Furthermore, the alternation of *kon/kard* 'do' was not analyzed. I would have predicted the final /n/ to delete,[27] resulting in *ko-t or *ka-t (/a/ is an available vowel alternation). Given the existence of predictable forms of 'do' in other similar languages like Sorani *a-ka-t* 'asp-do-past', I intend to look at any historical changes to this light verb more closely in future work. However, *kon-kar 'do,'* and *shav-sho* 'become' with their irregular alternations are true light verbs, and semantically bleached. Therefore, their exceptional phonological forms may not bear on the argument of simple verb root alternations. Additionally, more than one choice for vowel epenthesis exists preceding the overt verbalizers *–s* and *–f*. I did not investigate the nature of those choices, which may be interacting with other vowels in the root (e.g. insertion of /o/ preceding *–f* in √*pazir* 'accept' vs. insertion of /e/ preceding *–s* in √*tavân* 'can') One final point that was not investigated was the difference between the alternating and non-alternating root forms. More specifically, why do certain verbs undergo an alternation, while others take an overt verbalizer, for example, *ârâ* 'beautify' ends in â, it could have alternated to

[27] Alternation to /s/ is unavailable for several reasons.

**âru-d*, instead it requires an overt verbalizer. The same goes for *tavân* 'can.' It alternates to *tavânest*, instead of **tavâd* (n deletion), or **tavâs* (n -> s). Finally, I was not able to find any distinguishing characteristics for either overt verbalizer *–s* or *–f,* as there are too few verbs containing these verbalizers.

CHAPTER THREE: NON-ALTERNATING SIMPLE VERBS

3.1 Introduction

In chapter 2, I proposed that the systematic alternations in the past/present simple verb stems hinted at a null verbalizer within the structure, between the root and tense, and I showed this verbalizer to be the locus of change seen in these roots. In this chapter, I focus on the *pseudo-infinitive* verbs, and present a new analysis for these verbs that unifies all simple verbs into a [root + verbalizer] construction.

Working within the Distributed Morphology framework (Henceforth DM) (Halle and Marantz 1993), I argue against a mono-morphemic analysis of the Persian *pseudo-infinitive* morpheme *-id.* Instead, in line with the analysis in chapter two, I claim that *-id* is made out of an overt verbalizer *-i-* in conjunction with the voiced version of the tense morpheme *-d/-t.* The data in this chapter independently support positing a null verbalizer in cases where *–i-* is not present, which I illustrated to be the case in chapter 2 when analyzing the systematic alternations. The decomposition of the *pseudo-infinitive* into verbalizer and tense is shown to be consistent with modern independently motivated theories of verb phrase structure (Harley and Folli 2005, Harley 2008, among others) and provides a more adequate characterization of the distribution of *–id* than the 'pseudo-infinitive' analysis. The analysis offered here is superior to previous descriptions of simple verbs as it encompasses both alternating and non-alternating verbs, and makes accurate predictions about morphological causative constructions in Persian by providing a structural explanation for the blocking pattern of the causative morpheme, a topic tackled in chapter 4.

As discussed in chapter two, simple verbs have not typically been separated into root and suffix, but instead presented as a whole unit in the literature. The dictionary form of these verbs is usually presented as the third person singular, past tense, with the addition of an infinitival marker *–an* (e.g., *david**an*** 'to run,' *david*[28] 'he/she ran'). Khanlari (1973) observes that simple verbs are formed when a root takes either a tense morpheme that alternates in voicing depending on its preceding environment (su<u>x</u>**-t** 'burnt', xo<u>r</u>**-d** 'ate'), or the *pseudo-infinitive* morpheme *–id*, as in *dozd**-id*** 'stole' and *raghs**-id*** 'danced.'

Karimi (2005) briefly discusses simple verb affixation and separates the affixes into two categories: first are verbal stems that have a past and present stem alternation, as in (39a-b), which get affixed with *–t/-d*, and are discussed in chapter two. The second are nominal, non-alternating stems that are affixed with *–id*, as in (39c). According to both Karimi (2005) and Khanlari (1973), verbs such as those shown in (39c) are "a set of infinitives known as *masdar-e ja'li* or 'pseudo-infinitive.' These infinitives are historically formed by adding */-id/* to an existing noun" (2005:113-114).

(39)

<u>Present</u>	<u>Past</u>	<u>Meaning</u>
a. rav	raf+**t**	'go'
b. xor	xor+**d**	'eat'
c. xâb	xâb-**id**	'sleep'

Karimi (2005) further notes that only verbal roots are suffixed with 'true' tense *–t/-d*. Given the literature's explanation above, the roots' selection of *-id* or tense *–t/-d* is pretty much fixed in the literature, such that native speakers are aware which roots are meant to

[28] The third person singular past tense morpheme is null in Persian.

a.	david-am	'run.past-1sg'	d.	david-im	'run.past-1pl'
b.	david-i	'run.past-2sg'	e.	david-id	'run.past-2pl'
c.	david-∅	'run.past-3sg'	f.	david-and	'run.past-3pl'

appear with *–id* and which are not[29]. A complete picture of the literature on the *pseudo-infinitive* morpheme is presented in section 3.5.

What makes the *pseudo-infinitive* puzzle unique is that there is no work examining the shortcomings seen within the current picture of simple verbs presented in Persian literature. As such, I first posit the existence of an overt verbalizer, and argue for a unified analysis of all simple verbs in Persian, providing evidence that both the alternating verbs discussed in chapter 2 and the non-alternating verbs in this chapter have the same basic structure. I then show that the analyses presented in the literature are not adequate to deal with the data.

The structure of the chapter is as follows: Section 3.1 introduces the topic and provides some background information. Section 3.2 presents the data, section 3.3 briefly explains the DM framework and argues for an acategorical analysis of roots in Persian simple verbs. Section 3.4 discusses the theoretical approach and proposes an analysis to uniformly treat the data. Due to the complex nature of the data, previous literature and issues with each analysis are presented in section 3.5, confirming that the analysis presented here is a better fit for the data. Section 3.6 concludes this chapter.

3.2 Data

A large number of simple verbs in Persian end in *–id*. One problem with the categorization provided in the literature is that *–id* does not consistently attach to the same type of stem. Example (40) provides a snapshot of the different stems that take the

[29] Simple verbs are gradually giving way to complex predicates in Persian (Khanlari 1973, Karimi 1997, Khuini 2013).

–t/-d affix, while (41) illustrates those with the *–id* affix[30](The stems that take *–t/-d* are provided for comparison.)

In (41), *-id* is shown to attach to both free and bound morphemes with different properties: nominal Arabic loan words (a) and (b), bound morphemes that do not show root alternations (c), (d), and (e), a bound morpheme that shows root alternation colloquially (f), non-word (g), bound Arabic loan word (h).

(40)

	Present	/Past form	meaning	root	Morpheme type
a.	suz	sux-t	burn	√suz/sux	verbal stem/alternate bound
b.	bar	bor-d	take	√bar/bor	verbal stem/alternate bound
c.	xor	xor-d	eat	√xor	verb stem/non-alter. bound
d.	tavân	tavânes-t	can, ability	√tavân	verb stem/non-alter bound

(41)

a.	raghs	ragsh-id	dance	√raghs	noun/Arabic loan
b.	dozd	dozd-id	steal	√dozd	noun/Arabic loan
c.	xar	xar-id	buy	√xar	non-alter./bound
d.	pors	pors-id	ask	√pors	non-alter./bound
e.	kush	kush-id	try	√kush	non-alter./bound
f.	d(av)	dav-id	run	√d(av)	non-alter./bound colloquial alter.
g.	laf	laf-id	brag	√laf	non-alter./bound
h.	talab	talab-id	beg,request	√talab	bound/Arabic loan

Previous characterizations of the *-id* class of verbs do not reflect the full complexity of the stem types documented in (41) above. Khanlari (1973) claims that nominals and

[30] An obvious observation, but worth noting none the less (for the benefit of non-native speakers) is that *–i-* taking verbs are unacceptable with a reduced or missing *–i-* (i.e., *pash-id, *pâshd,*pâsht* 'scatter').

Arabic loan words can take *–id*. Verbs made with Arabic loan words are: *raqsidan* 'dance,' *fahmidan* 'to understand,' *talabidan* 'to desire,' *bal'idan* 'to gulp, swallow.' Khanlari provides the following verbs as examples of Persian nominals taking *–id*: *charidan* 'to graze', *charxidan* 'to spin' *torshidan* 'to sour' *dozdidan* 'to steal' (1973: 118).

Without completely discounting the generalizations made in the literature, I present a glimpse of the different verbal categories *id* attaches to. I first analyze the verbs using other criteria, such as transitivity, and Vendler's classification of verbs to show that there are no obvious classificational differences between *–id* taking verbs and the past/present stem alternating simple verbs in Persian, which the literature claims to be "true verbal stems." There are about 115 simple verbs in Persian (Karimi 1997 qtd. from Sadeqi 1993), most archaic and not in use. Table 15 is a representative list of 33 simple verbs, classified as *pseudo-infinitives*, separated by transitivity. The intransitive verbs have been labeled either unaccusative or unergative based on a simple intentionality test, as shown in a small number of the verbs[31]. The intentionality test was conducted by forming sentences in which the subject is described as performing the action on purpose. Since unaccusative verbs lack a volitional subject, they would be ungrammatical in a context where the subject acted agentively[32].

---

[31] (i) Zâl amdan be xune david-ø
Zâl intentionally to house ran-3sg
'Zâl ran home intentionally.'

(ii) # Zâl amdan az mâr mi-tars-e
Zâl intentionally from snake dur-fear-3sg
'Zâl is intentionally afraid of snakes.'

(iii) # xorshid amdan tâbid-ø
sun intentionally shone/shined-3sg
'the sun intentionally shone'

(iv) gonjeshk amdan parid-ø
sparrow intentionally flew-£sg
'the sparrow flew off intentionally.'

[32] More tests are needed to categorize all intransitive verbs properly, as the intentionally test doesn't quite work with verbs like *xâb-id-an* 'sleep', or *fahm-id-an* 'understand,' and even *qaltid* 'roll over, tumble' which are acceptable both as an unaccusative and as an unergative verb in certain contexts and depending on animacy of subject. Table 15. is only a superficial categorization of intransitive simple verbs to illustrate that the *–id* affix does not attach to specific stems based on their transitivite property.

Table 15. ***Transitivity and –id***

Unaccusatives	a. harâs-id-an	scared
	b. gand-id-an	rot
	c. tâb-id-an	shine (intr.)
	d. deraxsh-id-an	shine (intr.)
	e. jush-id-an	boil
	f. tars-id-an	fear
	g. chap-id-an	be jammed
	h. chek-id-an	drop
	i. pus-id-an	decay
	j. gard-id-an	turn, rotate
	k. ranj-id-an	suffer, pain, etc.
	l. larz-id-an	shiver, tremble
Unergatives	m. char-id-an	graze (tr/intr)
	n. par-id-an	jump, fly
	o. res-id-an	arrive
	p. xand-id-an	laugh
	q. raghs-id-an	dance
	r. nâz-id-an	be boastful
	s. qalt-id-an	roll over/around
	t. dav-id-an	run
	u. jonb-id-an	move, shake
Transatives	v. push-id-an	dress, cover
	w. xar-id-an	itch
	x. kesh-id-an	drag, draw
	y. nush-id-an	drink
	z. tarâsh-id-an	sharpen, cut
	aa. pâsh-id-an	scatter
	bb. baxsh-id-an	grant, forgive
	cc. pich-id-an	wrap up
	dd. chesh-id-an	taste
	ee. chasb-id-an	stick
	ff. mâl-id-an	rub

As noted in Table 15, *-id* can be found in unaccusatives, unergatives, and transitive simple verbs, and as can be seen from (41) above, it appears to attach to both bound morphemes and nominals.

Additionally, the following examples show *–id* verbs across different verbal classifications introduced by Vendler (1957, 1967) and further discussed in Dowty

(1979): *states, achievments, accomplishments, and activities.* For reference, I've included both *–t/d* and *–id* class, to note that both affixes span across all four verbal types.

(42)	*Accomplishment*	*Achievement*	*States*	*Activities*
-t/d	sâxtan (-e xune)	mordan	dânestan	shostan
	building a house	*dying*	*knowing*	*washing*

(43)	*Accomplishment*	*Achievement*	*States*	*Activities*
-id	keshidan (-e dâyere)	residan	fahmidan	davidan
	drawing a circle	*arriving*	*understanding*	*running*

Rothstein (2004) notes that one way to tease the four classes of verbs apart is to use two aspectual properties: +/-telicity, defined as distinguishing an end point, and +/-stages, defined as whether or not the verbs occur in the progressive aspect (For a different perspective of verb classification see (Bach 1986, Carlson 1981)). In sum, activities and accomplishments are telic, while states and achievement are atelic. *Achievements* and *states* are [-stage], and as *accomplishments* and *activities* have stages of completion they are [+stages]. Applying Vendler's classification to simple verbs in Persian is interesting, but does not bear on the argument presented here, and will not be explored further. Suffice it to say, there doesn't appear to be a semantic distinction between the *–t/d* (*alternating root*) class, and the *–id (non-alternating root)* class of verbs.

3.3 Roots as Acategorical Elements

In this section, I discuss the concept of an acategorical root from the Distributed Morphology framework, which is also briefly explained here. I then propose that positing acategorial roots in Persian allows for an enhanced understanding of verbalizers and the internal construction of simple verbs in Farsi.

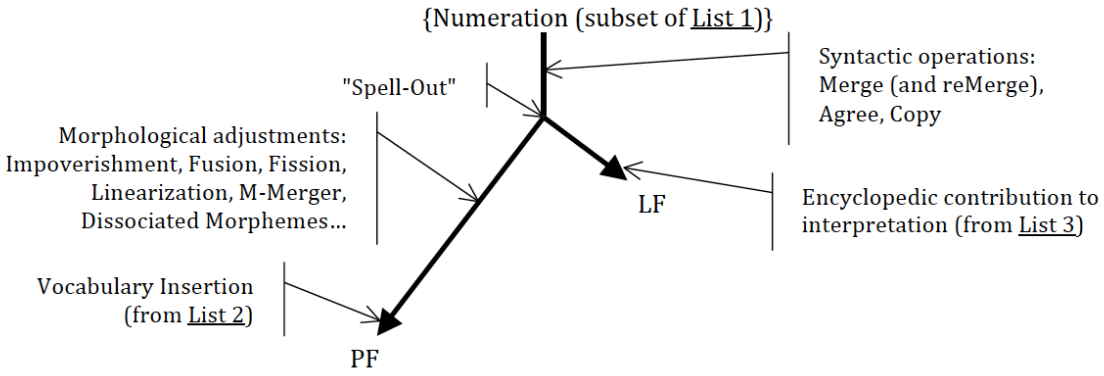
Traditional morphological theories held fast to the idea that the phonological form, the meaning, and syntactic category of each 'morpheme' was stored in the lexicon, explicitly

in the specifications of the 'morpheme'. Distributed Morphology (Halle and Marantz 1993) rejects the traditional concept of a lexicon, and extends the features once constrained to morphology across phonology, syntax, and semantics. In a nutshell, 'roots' are acategorical, and derive their category from the structure. According to Harley and Noyer (1999), different parts of speech, labeled 'roots' in Pesetsky (1995), are defined as l-morphemes (i.e., content words); the l-morpheme is in a category-defining relationship with a function morpheme (f-morpheme). In this view, a verb is a root with its closest c-commanding f-morpheme is v, Aspect, and Tense (Harley and Noyer 1999). There are three core concepts in DM briefly touched on here. The first is 'syntactic hierarchical structure all the way down.' This simply means that the internal structure of a 'word' is represented in the same fashion as syntactic constituency representations with binary branching. The second, is 'late insertion.' Late insertion implies that syntactic categories are in fact abstract and don't have any phonological content. Vocabulary Items (VI)[33], are inserted into the structure during SPELLOUT, after the syntax has applied (i.e., late). The final core concept is 'underspecification.' This refers to phonological expressions being underspecified for the syntactic position where they are inserted, and not entering syntax with a predetermined syntactic category. These concepts are elaborated on below.

The DM model delegates the different functions of what we call a "morpheme," into three separate lists: Feature bundles, VIs and the encyclopedia, shown in (44).

[33] A Vocabulary Item, as described by Harley and Noyer (1999), is the relationship between a phonological string and information regarding where that phonological string can be inserted. A set of VIs like (*-en, s, -i*) provide the set of phonological signals available in English for expressing the abstract plural morpheme.

(44) The Distributed Morphology model



(Halle & Marantz, 1993 qtd. in Harley 2013:3)

List one, the abstract 'morphemes,' are bundles of "morphosyntactic features specifying structural relations." In syntax, these features are subject to Merge, Move, and Agree (Harley 2013:3). The second list, the VIs, are the phonological forms that compete for insertion into the terminal node. Only the VIs that match the specifications of the terminal node can compete. The VI that is underspecified for the feature bundle, but has the most matches, wins out and is inserted into the terminal node. (An example of this would be the plural marker *–en* in English being selected to express a plurality of oxen instead of the other competing plural VIs) Finally, the third list, the encyclopedia, contains the "interpretive operations" that help 'realize' the meaning of the completed structure.

The presumed process is as follows: the syntax forms a structure from the selected feature bundles during numeration. After SPELL OUT, at PF, in order for the structure to receive phonological interpretation, vocabulary items compete to provide "realizations for these positions of exponence according to the Subset Principle[34] (Halle 1997) a version of

[34] The Subset Principle is concerned with how feature subset relations determine vocabulary insertion and implement the Elsewhere Principle.

(Kiparsky 1973)'s Elsewhere Condition[35]" (Harley 2013:4). It is this Subset Principle that requires the elements that realize a position in the structure to be the most appropriate, and the most specialized realization for that node. Ultimately, as l-morphemes, the choice between the VIs /kæt/ and /dɔg/ will come down to speaker choice and the encyclopedia information, which determines the meaning of the entire phrase, allowing us interpretations where /kæt/ might refer to the animal or 'a secret,' or /dɔg/ might refer to a friend, or a four-legged animal, etc. On the other hand, in cases of root suppletion, and morphologically conditioned allomorphy, we see VIs truly competing for insertion: The most specified VI blocks the other VIs from insertion at the terminal node,[36] such that the plural *–en* would block would plural *-z* when realized next to 'ox.' In DM, the existence of suppletive forms are accounted for by assuming an underlying allophone, such that other suppletive forms are derived through readjustment rules.

The concept of an acategorical root is not only aesthetically appealing, but also resolves existing inconsistencies regarding the attachment of the past tense and *pseudo-infinitive* affixes in simple verbs. I address these issues below.

First, recall the discussion in chapter 2, where the concept of an inherently verbal root with past/present forms was challenged. For these alternating verbs in chapter 2, I showed that assuming these roots to be acategorical (i.e., requiring a verbalizer) allowed for a more consistent description of the changes seen in the past forms of these verbs.

Second, challenging Karimi (2005)'s observation that the *pseudo-infinitive* morpheme attaches to existing nouns, I target the non-alternating roots in their bare form. I reserve

[35] Elsewhere condition (Kiparsky 1973) refers to when a specific form is preferred over a more general form. For example, the irregular form '-en' is preferred over the regular plural marker –s in the word *oxen*.

[36] See Harley (2013) for an in-depth analysis of root suppletion evaluated within the DM model.

the label *nominal root* for roots that can appear as bare nouns, as in (45). Roots that aren't nominal are ungrammatical in nominal contexts like (46).

(45) raghs-e hindi balad ni-st-am
dance-EZ hindi know neg-is-1sg
'I don't know hindi-dance'

(46) *sux-e dardnâk
burn-EZ painful
Intended: 'a painful burn'

With the exception of *raghs* 'dance' and *dozd* 'steal,' none of the *–id* taking verbs can appear as a bare noun, or in a nominal context. For example, the root *ranj*, 'suffer' takes *–id,* not the past tense *–t/-d* (47a), even though it is ungrammatical in a nominal context[37] (47b). The same is true of √*xar*, 'buy' as shown in (48).

(47) a. ranj-id
'suffered'

b. *ranj-e man kasi ro nârâhat na-kard
suffer-EZ 1SG anyone-RA upset NEG-do.pst
'intended: My suffering didn't bother anyone'

(48) a. xar-id
'bought'

b. **xar-e geruni bud
buy-EZ expensive was
'Intended: it was an expensive buy' *('xar' does not refer to donkey here)*

Thus, the notion that 'roots which require *–id* are nominal' is problematic. There is also issue with the traditional characterization of the *–t/-d* "alternating class." As we have seen, there are a few cases where the tense inflection *–t/-d* attaches to non-alternating roots. For example, not taking into account the analysis presented in the previous chapter,

[37] *-esh* is a nominalizer in Persian: such as √jah 'jump' *jah-esh* 'jump'

we would consider √*xor 'eat',* to be a non-alternating verb that nonetheless gets the *–t/-d* affix.

(49) a. ghazâ xor-d-am
food eat-pst-1sg
'I ate (food)'

b. ghazâ mi-xor-am
food prog-eat-1sg
'I'm eating (food)'

The presence or absence of *-i-* is not motivated by phonology, as shown by the fact that homophonous pairs of roots exist that are categorized distinctly, and inflect for past tense like a 'nominal' root or like a 'verbal' root, as shown in (50).

(50) a. bor-d
take-PST
'took'

b. bor-id
cut-pseudo.inf
'cut'

We can then ask, what does determine the distribution of *–t/-d* vs. *–id*? Given the descriptive inconsistencies with assigning a category to the stems that the past tense affixes attach to, I suggest following DM's assumption of an acategorical root to deal with the data. Under an acategorical root analysis, the existence of an affix that attaches to 'nominal roots' to form pseudo verbs is not adequate. Conversely, as I showed in chapter two, assuming 'true' past tense affixes to alternating verbal stems required re-evaluation. A final piece of evidence in favor of the acategorical nature of roots in Persian is presented in 3.4.4.2, which shows the analysis presented in this and the previous chapter to be borne out.

The following section expands on my proposal from chapter two, which states that simple verbs are internally complex. Section 3.4.1 covers the interaction of tense and verbalizer, while 3.4.2 presents the structure for overt and covert verbalizers. Section 3.4.3 discusses

VI insertion and verbalizer selection, followed by a unified account of simple verbs in 3.4.4. Sections 3.4.4.1 and 3.4.4.2 present further evidence regarding simple verbs and the nature of verbalizer selection confirming the unified account of simple verbs presented in 3.4.4.

3.4 Proposal

To deal with the inconsistencies discussed above, I suggest that *–id* is bimorphemic and composed of an overt verbalizer, and the voiced allomorph of tense, which is the predicted to surface because the tense morpheme is following a vowel. In this section, I present the structure for such a proposal. Positing a verbalizer slot between the root and tense is cross linguistically attested (Harley and Folli 2005, Harley 2008, Key 2012 among others).

3.4.1 Interaction of Verbalizer and Tense

The focus of this and the previous chapter has been on past tense verbalizers. This is because there is evidence of these verbalizers, either as overt phonemes, or as an element whose existence can be confirmed through phonological alternations to the root. Given the evidence of a verbalizer in past tense simple verbs, I posit the existence of a null [-past] verbalizer in present form verbs that does not initiate any alternations to the root. In the alternating verbs, the difference between the null past and null present tense verbalizers comes down to whether it triggers an alternation or not, (51). While verbs with the overt past tense verbalizer, show the lack of *–i-* in the present tense, (52).

(51) a. *past tense*

kabâb	suz- ø$^{[+past]}$	-t-ø	⇒ *suxt*
kabab	burn-verbalizer-PST-3sg		

'The kabab burnt'

b. *present tense*
kabâb dar-e mi-suz- ø[-past] -e
kabab is dur-burn-verbalizer -3sg
'The kabab is burning.'

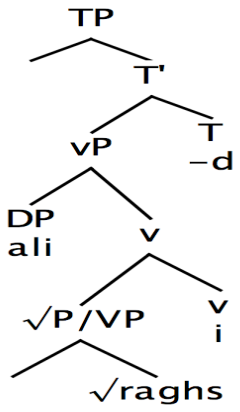
(52) a. *past tense*
Ali raghs-i[+past] -d-ø
Ali dance-verbalizer-pst-3sg
'Ali danced'

b. *present tense*
lotfan na-raghs- ø[-past] -ø
please neg-dance-verbalizer -2sg
'Please don't dance'

3.4.2 Little-v Alternation: Overt or Covert

As noted above, I propose that the *pseudo-infinitive* morpheme is bi-morphemic, composed of a verbalizer *–i-* and the regular tense morpheme *–t/-d*, which is always voiced in this environment. In essence, I argue for internal complexity in all simple verbs, positing a verbalizer between the root and tense, which can be either overt or covert. The structure representing an overt verbalizer is presented in (53).

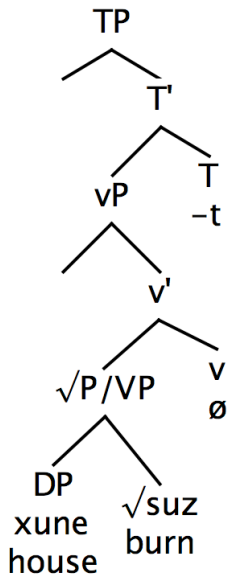
(53) overt verbalizer
[$_{TP}$[$_{vP}$ Ali [$_{√/VP}$ raghs] [$_{v}$-i-]][$_{T}$-d]]



The overt verbalizer, *-i-,* does not trigger any changes to the root, but serves as a verbalizer for roots, and free and bound stems.

The following tree represents the structure for a verb with a null verbalizer. We saw evidence of the null verbalizer in the systematic alternations noted in chapter 2. (Non-crucial details are not illustrated.)

(54) null verbalizer
[$_{TP}$[$_{vP}$ [$_{√/VP}$ xune suz] [$_{v}$ Ø]][$_{T}$-t]]

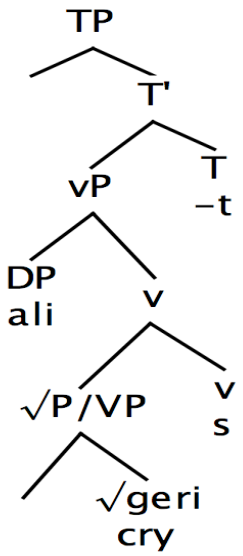


Here, √suz is inserted into a structure with a null verbalizer. The null verbalizer triggers the alternation seen in the set of 'alternating past stems'.

Finally, the use of the overt verbalizers *–s* and *–f* is more restricted and limited to even a smaller subset of verbs in Persian (discussed in chapter 2). These consonantal verbalizers occasionally show vowel epenthesis between it and the root, as clusters such as *nst are disallowed. (This epenthesis between the root and verbalizer is not to be confused with

vowel epenthesis observed between the verbalizer and tense in chapter 2, section 2.6.4: *ferest∅(â)d* 'sent', and *oft∅(â)d* 'fell').

(55) Consonantal verbalizer
[$_{TP}$[$_{vP}$ ali [$_{√/VP}$ geri] [$_{v}$ -s]][$_{T}$-t]]



In this section, I showed that all simple verbs in the past tense take either a null or overt verbalizer. In the following section, I also address the present and future tenses.

3.4.3 VI Insertion and Choice of an Overt Verbalizer

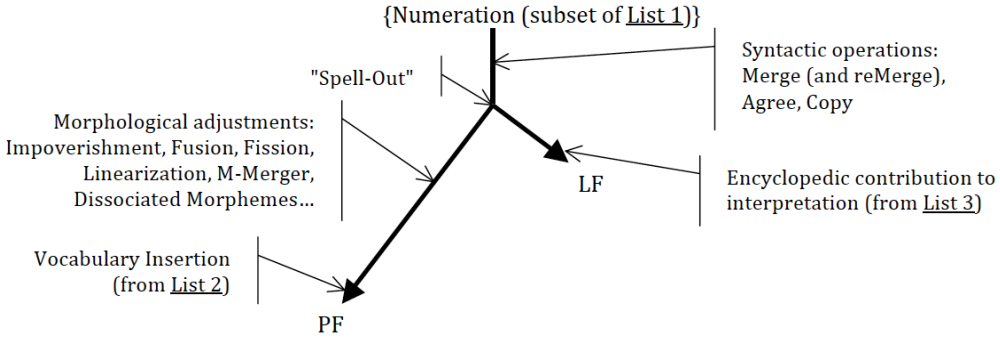
As noted in 3.3, this work follows the DM framework (Halle and Marantz 1993). Here, I will only discuss the choice of VI for simple verbs in Persian. Given the evidence discussed above, roots either condition the insertion of a null verbalizer in the past tense, argued for in chapter 2, or receive the default *–i-* verbalizer at the postsyntactic morphological level. I propose the VI in (56) for simple verbs in Persian. I claim all verbs to take the null [-past] verbalizer in the present tense.

(56) *Simple verb verbalizer VIs*

Present tense	a. v	↔	ø[-past]	/[present tense]
Past tense				
	b. v	↔	ø[+past]	/ [____ √] triggers alternations
	c. v	↔	-i-	/ [Elsewhere]
	d. v	↔	-s-	/ [___ √, ârâ, tavân, geri, ru][38]
	e. v	↔	-f-	/ [___ √, pazir, ru, gu]

According to Harley (2013), roots take the verbalizer they are specified to appear with. In other words, in the past tense, each root is already predetermined to appear with a specific verbalizer, and this information is stored in our lexicon. As mentioned in section 3.0, Harley (2013) explains that each root from list 1 (example (44), repeated here as (57)) has an index notation (i.e., number), which can then be paired with its phonological realization from list 2 (Vocabulary Item), and instructions from list 3 'the encyclopedia information.'

(57) DM model (Halle & Marantz, 1993) In Harley (2013:3)



To use a Persian verb as an example, the root √suz 'burn' would have a numerical notation (list 1) that pairs with its phonological realization [suz] from list 2, and its meaning in list 3. Since these roots are acategorical, they require a verbalizer, which can be realized from the list provided in (56) according to the specifications on the root. Note that the alternation from *suz* to *sux* was addressed in chapter 2.

[38] *–s* and *–f* are only used in 7 verbs, and appear to be unproductive. Due to the extreme limited number of verbs that take these verbalizers, I was unable to find a specific phonological environment for their selection.

3.4.4 Unified Account

Given the analysis presented in this and the previous chapter, I argue that all simple verbs in Persian are internally complex. In the past tense, all simple verbs either condition an overt or covert verbalizer. While the overt verbalizer doesn't initiate any changes to the root, in chapter 2, I argued that the null verbalizer does initiate changes to the root. If we understand internal root changes to occur owing to the +past null verbalizer, we no longer require a distinction between past/present stem alternating verbs and *–id* taking verbs. We can now have a unified picture of simple verbs, as in (58).

(58) $(\sqrt{} + verbalizer)$

I argue (58) to be the underlying structure of simple verbs, namely a root combines with a version of the verbalizer to form a simple verb. In the present tense, this leads to roots and present stem verbs being homophonous, as there is also no overt verbalizer or tense marker in the present forms. In the past tense, however, there is a choice of two main verbalizers: *-i-,* and *-ø*. The overt [+ past] verbalizer, *-i-,* does not alter the root, while the null [+past] verbalizer triggers root alternations, as shown in chapter 2. The underlying structure presented in (58) accounts for all simple verb constructions, and represents a unified analysis of simple verbs without depending on a *pseudo-infinitive* analysis, or inherent present/past stems. Additionally, as illustrated in chapter 2, while the underlying form of the tense affix is voiced, the voicing of the past tense affix (i.e., the voiced or voiceless alveolar stop, *-t/d)* depends on the output of the root+verbalizer. In other words, the past tense affix *–t/d* simply takes on the voicing features of its preceding environment (i.e., [√ +verbalizer] + *-t/d)*. When the output ends in a vowel or voiced consonant, the tense affix is voiced, otherwise it appears as *–t*.

(59)

	root/root+ $_{v}Ø^{[-pst]}$	verbalizer	past tense affix	meaning
a.	xor	$-Ø^{[+pst]}$	-d (xord)	'ate'
b.	xar	$-i^{[+pst]}$	-d (xarid)	'bought'
c.	bar	$-Ø^{[+pst]}$	-d (bord)	'took'
d.	bor	$-i^{[+pst]}$	-d (borid)	'cut'
e.	sâz	$-Ø^{[+pst]}$	-d (sax-t)	'built'
f.	paz	$-Ø^{[+pst]}$	-d (pox-t)	'cooked'
g.	ferest	$-Ø^{[+pst]}$	-d (ferestâd)	'sent'
h.	parast	$-i^{[+pst]}$	-d (parastid)	'worshiped'
i.	ru	-s	-d (ro-s-t)	'grow, sprout'
j.	ru	-f	-d (ro-f-t)	'sweep'

In the next section, I review evidence from synchronic and diachronic change, language acquisition, and some cross linguistic data.

3.4.4.1 Evidence

Here, I suggest that LVs are another version of the verbalizer *–i-* used in modern Persian. Verbs like *so'âl porsidan* 'question asking', *dune pâshidan* 'seed scattering', *derâz keshidan* 'stretch drawing', where the *–id* verb is actually the LV of the CPr are composed of patterns I will discuss in future work. This chapter introduces the changes from simple to complex predicate where the *–i-* is dropped, or replaced with an LV, and the root becomes the NVE in the structure (i.e, *pasand kardan*). Data on both synchronic and diachronic changes in verbs in Persian supports the hypothesis of an overt verbalizer. (59) are examples from Karimi (1997), showing the so-called *–id* verbs' synchronic change from simple to complex predicate. Simultaneous use of both forms is common in languages undergoing change.

(60)

	Simple verbs	Complex predicates	Meaning
a.	pasand-idan	pasand kardan	'approve'
b.	kush-idan	kushesh kardan	'try'
c.	laf-idan	laf zadan	'brag'

As language evolves, we see more such examples: *qaltidan* to *qalt zadan* 'toss and turn, roll,' *geristan* to *gerye kardan* 'to cry', *fariftan* to *farib dâdan* etc., where the simple verb is no longer in use. This is not surprising, and the fact that CPrs have been replacing simple verbs has been noted before (Khanlari 1973, Karimi 1997, Khuini 2013). The analysis I present in this and the previous chapter is in line with this language change, as example (61) illustrates how the LV and the simple verb verbalizers can be in complementary distribution. I assume tense not to be part of the LV, but a separate projection.

(61)

	Root	verbalizer	meaning
a.	pasand	-i-/kar 'do'	'approve'
b.	laf	-i-/za 'hit'	'brag'
c.	kush	-i-/kar 'do'	'try'
d.	ger	-s-/kar 'do'	'cry'
e.	farib	-∅-/d(â) 'give'	'trick'

Hence, √pasand can take either the overt verbalizer *–i-,* or the LV *kard* to form a verb. In (60c), *-esh* is added to the NVE to form a noun from a bound morpheme, as in *kushesh kard* 'tried.' The addition of *–esh* is in line with the evidence presented so far that the little-v in simple verbs is root attaching, while LVs appear to take NVEs that have a lexical category.

Similarly, Khanlari (1973) made a relevant observation that I include here. Observationally, he reports the compatibility of '*-id'* with the light verb, noting that *–id* verbs formed from Arabic or Persian nouns can compose with *kardan* instead of *-id*, and still relay more or less the same meaning, as in (62).

(62)

Simple verbs	Complex predicates	Meaning
a. jangidan	jang kardan	'fight, battle'
b. qârtidan	qârt kardan	'plunder'
c. raghsidan	raghs kardan	'dance'
d. talabidan	talab kardan	'desire, crave, seek'

e. ârâstan	ârâyesh kardan[39]	'to beautify, put on makeup'
f. shetâftan	shetâb kardan	'hurry'

(Khanlari 1973)

Moreover, we also see evidence of overgeneralization in language acquisition, where a child or L2 learner may over extend and create *pazid* instead of *poxt* 'cook', or *suzid* instead of *suxt* 'burnt' (similar to *kub*/*kubid* 'pounded' instead of *kub*/*kuft,* where the latter is now considered formal or archaic.

Finally, there are also interesting cross linguistic examples. For example, instead of *–i-*, Sorani, a Kurdish language spoken in Soleimaniye, Iraq and Iran, adds the light verb *kard* to a stem that traditionally gets *'-i-'* in Persian[40] (i.e., *raqs kardan).* Baluchi represents this verb as a complex predicate with the light verb 'do' (i.e., *nač korten* 'dance do'). Given that √raqs is borrowed from Arabic, the 'choice' of verbalizer between *–i-* or the LV 'do' is telling of *–i-'*s structural position. In the following section, I further address how the analysis presented here can be extended to all simple verbs.

3.4.4.2 Roots compatible with either verbalizer

Given my claim that all simple verbs have the same underlying structure, it stands to reason to wonder if roots can also appear with a verbalizer they wouldn't traditionally appear with. In fact, this does seem to be the case. (63a-b) show verb pairs, where both forms are still in use. (63c-d) show diachronic change from use of the null verbalizer to use of the overt verbalizer. Interestingly, neither verb forms in (63c-d) are used; the current colloquial forms for (63c-d) are *parid* 'jumped' and *dar âmad* 'come out' (lit:'out come') respectively.

[39]This verb is an example in which the CPr has a different meaning the simple verb. While *ârâstan* means 'to decorate' or 'to adorn' *ârâyesh kardan* means 'to put on makeup, to dress, or to groom'

[40] Dari also represents this verb as the complex predicate, *raqs kardan.*

(63)

	root/present form		*alternating past stem*	*non-alternating past stem*
a.	xâb	'sleep'	xof- ∅-t	xâb-i-d
b.	kub	'pound'	kuf-∅-t	kub-i-d
c.	jah	'jump'	jas-∅-t	jah-i-d
d.	ru	'grow'	ro -s -t	ru(y)-i-d

As we can see, *xoft* versus *xab-id,* (63a), shows a change in the language which confirms my claim that the zero verbalizer triggers alternation, while the overt verbalizer does not. In other words, For the same given root, if the overt verbalizer merges with the root instead, we see no internal change in the root between past and present forms (e.g., present form: √xâb, past form √xof 'xoft' and √xâb 'xâb-id', etc.) These findings are easily described by claiming that roots are acategorical, and the alternations in the root are not specified in the roots themselves, but are triggered by the null, +past verbalizer. (64) illustrates this point more clearly.

(64) *Past tense verbalizers (VIs)*

root: √xâb *sleep*		
+ past null verbalizer	Initiates internal root change	xâb+Ø=> xof -t
+ past –i- verbalizer	No root change	xâb+i=> xâbi -d

Moreover, Khanlari notes that some alternating verbs allow for another past tense stem: one that utilizes *–id* instead of the past/present root alternation. Examples below are taken from Khanlari (1973:99-100).

(65)

alternating past tense	non-alternating stem with -id	
angâr/angâsht	angâr-id	'notion'
angiz/angixt	angiz-id	'cause, motive'
bâz /bâxt	bâz-id	'lose'
tâz /tâxt	tâz-id[41]	'gallop'

What's interesting, is the fact that while most of the verbs in the second column don't exist in the current state of the language, Khanlari intuitively used the present form of the root to attach the *–id* stem to, in other words, the roots without the alternations.

[41] *tâzid* is now used in the current state of the language.

According to my analysis, the only morphological difference between the left and right columns in (65) is that the null verbalizer in the left column verbs licenses the root alternation, while the verbs on the right, taking the overt verbalizer, -*i*-, would not possess the feature to initiate an alternation. The verbs in the second column are roots that have not undergone alternation specified by the null past tense verbalizer[42].

In the following example, I provide the current colloquial forms for the alternating verbs first presented in chapter 2. Here, the reader may notice that the verbs that show a more recent colloquial form are CPrs, with a LV added to a root (now NVE) lacking the past form alternations. These verbs illustrate diachronic change, as the archaic-alternating past forms are no longer in use. In other words, the language's tendency for new verb formation is to create CPrs rather than using verbalizers[43].

(66)

root	NVE +	LV	meaning
√ **âzâr**	**âzâr**	dâd/kard	'bother'
√**ru**(b)	jâ**ru(b)**	zad/kard	'sweep'
√ **kâh**	**kâh**-esh	dâd	'decrease'
√**geri**	**ger**ye(geri+ -*e*)	kard	'cry'
√ **feshâr**	**feshâr**	dâd	'pressed'
√ **farib**	**farib**	dâd/xord	'tricked'
√**ju**	josto**ju**[44]	kard	'searched'

3.4.5 Interim Summary

I presented an argument for a more inclusive investigation of simple verbs in Persian, that provides a unified analysis of simple verbs.

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[42] The paradigm presented in this work has the potential to illuminate Embick's (2010) proposal concerning the difference between null and overt verbalizers.

[43] Of the 86 simple alternating verbs shown in Table 1 of chapter 2, most past tense simple forms are no longer in use and may have a completely different CPr form, such as *âmuz/ âmux* which now has a more common CPr form *yâd gereft /dâd* 'learn take/give.' These verbs have been provided in an appendix at the end of the chapter, but have no bearing on the argument here. Additionally, the verbs with simple alternating past forms which are still in use have been omitted from the chart below, but are provided in Appendix B. Finally, all colloquial forms of the verbs used throughout the different examples in this chapter have been compiled in Appendix C.

[44] Another verb worthy of an etymological investigation is *jostoju kard* 'search.' The NVE is treated as one word; however, note that the word is formed from the past and present simple forms of the verb connected by –*o* 'and': morpheme by morpheme jost-o-ju means '*searched and searching'*.

While the main argument of this chapter is to present evidence in favor of complexity within Persian simple verbs, and an overt verbalizer in the *pseudo-infinitive* set of verbs, I showed that, synchronically, most roots can take either verbalizer, with language favoring the *–i-* verbalizer when simple verbs are used. I also put forward an important proposal that an interaction between the verbalizer and LVs exist, which I explore in future work, as it is outside the scope of this dissertation.

In the following section, I discuss previous analyses of simple verbs in more detail, and point out the shortcomings of each analysis. Ultimately, I show that while each analysis can be descriptively adequate, only the analysis presented here provides predictions regarding alternating simple verbs and morphological causatives that is borne out.

3.5 Literature

Written in Persian, Khanlari (1973) discusses simple verbs and provides the traditional description of simple verbs and affixation noted earlier. This section also includes two modern descriptions: The first is a short description of simple verbs from Dabir-Moghaddam (1982), and the second is a brief description of the *pseudo-infinitive* in Karimi (2005). Between the traditional and modern literature noted here, two main hypotheses are explored. I end this section with a third hypothesis, tense allomorphy, suggested to me during presentation of this work at conferences, which I also reject. The counterarguments discussed below are provided to not only strengthen the analysis offered in this work, but to also offer a clearer picture of the facts to show that previous treatments of Persian simple verbs can't account for all the data.

3.5.1 Traditional Observations

As noted in section 3.1, according to traditional Persian grammars, the *pseudo-infinitive* affix attaches to existing nouns to form a set of *pseudo-infinitive* verbs, while the past/present stem alternating class are considered verbal stems that take the true past tense affixes (Khanlari 1973). This basic assumption was discussed and challenged in this chapter.

3.5.2 Modern Observations

To my knowledge, no attempt has been made to analyze simple verbs in modern linguistics. The main focus and intrigue has always been complex predicates, with little attention to simple verbs. Over the years, two works have briefly touched on simple verb affixation in Persian: Dabir-Moghaddam (1982), and Karimi (2005). I discuss both, noting that neither work focused on this topic specifically.

3.5.2.1 Dabir-Moghaddam (1982)

Dabir-Moghaddam's work is framed within LFG (Lexical-Functional Grammar)[45]. He mentions simple verbs in passing, as an observation regarding how he treats the formation of these verbs. He categorizes simple verbs based on regular or irregular stem type, claiming that irregular stems are formed by removing *–t*, (e.g., *nevesh-t),* while regular stems are formed by removing *–d* or *–id* (e.g., *raghs-id xor-d) (1982: 92)*.

(67)

Stem type	Affix allotted	verb
Regular	-d , id	xor-d, raghs-id
Irregular	-t	nevis/nevesh-t

A number of issues arise from this categorization. To begin with, it is simply descriptive. This description characterizes the differences noted between regular and irregular stems,

[45] A clearer picture of LFG and Dabir-Moghaddam's work within this framework is discussed in chapter 4, as it pertains to causative constructions.

however, adds to the mystery as it doesn't acknowledge that *–d* and *–t* are simply the same affix with a voicing alternation according to its preceding environment. By the same token, this categorization pattern pairs *–id* and *–d* as the same affix or as two affixes that have the same pattern of attachment without committing to either possibility.

Another problematic notion with his description of simple verbs is that it incorrectly implies that only the voiceless version of tense, *–t,* attaches to alternating stems. In other words, either suggesting that only the voiceless tense morpheme is responsible for the observed stem alternations, or that only *–t* attaches to alternated stems. Both hypotheses would run into problems immediately, as we have many examples of vowel alternating verbs that take *–d* instead of *–t* (e.g., *robâ/robu-d* 'steal').

3.5.2.2 Karimi (2005)

The second description of simple verb affixation comes from a brief description of simple verbs in Karimi (2005), while discussing (T)ense. Karimi (2005) works within the minimalist framework and categorizes simple verbs by affix type: *-id* vs. *–t/-d.* A detailed description of how the analysis works was presented in section 1.0. Below, I show how simple verbs are categorized in Karimi (2005). Compare (68) to (67) above, repeated here as (69), to note the inconsistencies between Karimi (2005) and Dabir-Moghaddam (1982).

(68) *Categorization of simple verbs according to Karimi (2005)*

Affix type	stem type	verb
Past tense –t/-d	alternating & non-alternating	nevis/nevesh-t xor-d
Pseudo inf. –id	Nouns	raghs-id

(69) *Categorization of simple verbs according to Dabir-Moghaddam (1982)*

Stem type	Affix allotted	verb
Regular	-d , id	xor-d, raghs-id
Irregular	-t	nevis/nevesh-t

As discussed in section 3.1 and 3.2, Karimi (2005)'s analysis is closest to a DM analysis, as it works within Minimalism, and categorizes the simple verbs by affix type. Still, there are shortcomings in assuming a *pseudo-infinitive* affix, which are discussed here.

Assuming a *pseudo-infinitive* morpheme is a descriptive solution that doesn't quite address the entirety of the data. In other words, although *–d* and *–t* are correctly grouped together as one affix under a *pseudo-infinitive* analysis, many important observations regarding simple verbs are overlooked. For example, such an analysis doesn't address why the voiced and voiceless versions of tense appear in similar environments but initiate different alternations, as discussed in chapter 2 (e.g., *pend**â**r/pendâsh-t* 'assume' & *fesh**â**r/feshor-d* 'squeeze, press'), or why root allomorphy occurs in the first place. To go one step further, this analysis doesn't take a stance on whether tense is causing root allomorphy, or if the voiceless version specifically selects for alternating roots? Of course, the reader should recall that this problem arises under an analysis where verbalizers are not included in the verbal structure (My analysis in this and the previous chapter address this conundrum by proposing a complex internal structure for simple verbs).

Overall, in regards to the *pseudo-infinitive* morpheme, my analysis has illustrated certain inconsistencies in regards to nominals (i.e., *-id* attaches to more than nominals), and phonological environment (which are also discussed below in section 3.5.2.3, examples (70-74)). In addition to those counter examples, we can also argue that a *pseudo-infinitive*

analysis fails to provide an explanation for the data, or make predictions regarding simple verbs or morphological causatives.

3.5.2.3 Alternate Suggestion: Tense Allomorphy

Another hypothesis to deal with the data is that *–id* is another allomorph of tense. This hypothesis is discussed in Dabir-Moghaddam's (1982) work, and was also suggested by Arsalan Kahnemuyipour and Jeffery Punske[46]. I also reject the hypothesis that the *pseudo-infinitive* morpheme is another allomorph of tense for reasons discussed below.

The first issue that arises with the tense allomorphy hypothesis is that it cannot account for the existence of verbs like *oftâd* 'fall', *feresttâd* 'send', which end in *–âd*. Not only does this add another allomorph to tense, it makes an analysis that relies on phonological environment quite difficult, as we have stems ending *–t* and *–st*, that appear with either *–id* or *-âd*. Compare (70a) to (71a) and (70b) to (71b).

(70) a. of**t**-âd 'fall' b. fere**st**-âd 'send'

(71) a. qal**t**-id 'rolled' b. para**st**-id 'worshipped'

There are also quite a few other simple verbs such as *pazir/pazirof-t* 'accepted' and *tavân/tavânest* 'could' and *ârâ/ârâst* 'beautified' which appear to introduce a whole slew of new tense allomorphy. As discussed in chapter 2, (70a-b) illustrates vowel epenthesis between the null verbalizer and the past tense morpheme in order to prevent illegal clusters (i.e., we only see /â/ epenthesized where the root ends in –t#, while *–i-* attaches to a variety of roots, and the final phoneme of the root is irrelevant.)

[46] During the presentation of this work at conferences, another suggestion was offered to deal with the data, namely that *–id* is simply another allomorph of tense. (Arsalan Kahnemuyipour-NACIL1, Jeff Punske-ALC).

Furthermore, a tense allomorphy analysis has nothing to say about the stem allomorphy that occurs in some verbs (e.g., *sux/suz* 'burn'). For example, in (72), if both stems end in /d/, why does one root alternate (72b), and the other doesn't, (72a)?

(72)

	present stem	past stem	affix	meaning
a.	pasan**d**	pasand	-id	approve
b.	ban**d**	ba**s**	-t	close

Or why homophonous past stems show different patterns, as in (73).

(73)

	Past stem	affix	Present stem	meaning
a.	bor	-id	bor	cut
b.	bor	-d	bar	take

Finally, as noted in chapter 2, recall that Bateni (1969) already reserves *–id* as an allomorph of tense, for verbs that show an alternation in the past form, culminating in a set of past tense affixes, [-t, -d, -id, and âd], and distinct from the *pseudo-infinitive* morpheme, which behaves differently from the 'tense allomorph' *–id* mentioned in Bateni (1969). The difference between these two affixes is conveyed in example (74).

(74)

	Present stem	past stem	affix	meaning	
a.	âfarin	âfar	-id	create	*(tense allomorph)*
b.	dozd	dozd	-id	stole	*(pseudo-infinitive)*

Under an analysis where the *pseudo-infinitive* is simply another allomorph of tense, there would be two *–id* affixes masquerading as past tense morphemes: one that initiates alternations, and one that doesn't. Additionally, such an analysis would again ignore the reasons for the root alternations needed to posit a verbalizer position. However, analyzing the data according to the proposal offered in this chapter, the verbs in (74) simply take two different verbalizers, noted in (75).

(75)

	Present stem	past stem	verbalizer	tense	meaning
c.	âfarin	âfari~~n~~	ø	-d	create
d.	dozd	dozd	-i	-d	stole

Therefore, assuming the *pseudo-infinitive* morpheme to be another past tense affix has its own drawbacks. In general, a tense allomorphy analysis completely fails to explain why phonological environment appears irrelevant to the affix. This can be noted by the verbs in (76), whose present stems all end in /r/.

(76)

verb	meaning	affix	type of alternation
a. xor-**d**	'ate'	-d	--
b. âzâr/âzor-**d**	'annoy'	-d	internal vowel change
c. xar-**id**	'bought'	-id	--
d. kâr/kâsh-**t**	'plant'	–t	r → sh
e. gard/gash-**t**	'search'	–t	r → sh & d devoiced/deleted
f. shur/shos-**t**	'wash'	–t	r → s & vowel change

3.6 Conclusion

In this chapter I argued for an overt verbalizer in complementary distribution with the null past tense verbalizer I argued for in chapter 2. I provided a unified analysis for all simple verbs, claiming that they are composed of a [√+ verbalizer], and then showed the arguments in the literature to be inadequate to deal with the data.

Suggesting that a verbalizer exists between the root and past tense morpheme in Persian simple verbs is a novel, more up-to-date, analysis that provides a better explanation for the data, as it does not lean on lexical category for the choice of 'tense allomorphy' (e.g., *-t/d* attaches to 'true verbs.') This study also leads to valuable predictions regarding the blocking pattern of morphological causatives, and what initiates stem alternation in the past/present alternating simple verbs. The findings presented here enhance our understanding of verbal structurers in Persian and have the potential to contribute to our understanding of roots and the nature of little-v in complex predicates (CPrs) in Persian, and possibly other Iranian languages. The novel proposal made here regarding the structure of Persian simple verbs also provides additional evidence for the DM model and

the concept of acategorical roots (Halle and Marantz 1993, Harley 2013), further attesting to languages sharing similar underlying features, defined as Universal Grammar.

CHAPTER FOUR: PERSIAN MORPHOLOGICAL CAUSATIVES

4.1 Introduction

In the previous two chapters, I discussed the internal structure of simple verbs and proposed a novel construction in line with recent work on verbal predicates (Folli et al. 2003, Folli and Harley 2005, Harley 2006, Key 2012, among others). I suggested that simple verbs in Persian are formed from a √ + verbalizer, and that this verbalizer can be null in the alternating class of simple verbs (*afrâz/afrâsh* 'raise') or overt in the *–id* class of verbs (*raghs/raghsid* 'dance'). I showed that in the past tense, the null verbalizer discussed in chapter 2 initiates alternations in the root (depending on certain phonotactic features), while the elsewhere, overt verbalizer*, -i-,* does not trigger any changes. There were also two, not so common consonantal verbalizers; these verbalizers occasionally triggered vowel epenthesis to avoid certain disallowed consonantal clusters. The findings of the previous chapters have a bearing on the morphological causative analysis in this chapter.

Persian has several types of causatives, which I discuss in section 4.2.2. The focus of this chapter is the causative construction formed from simple verbs in Persian, labeled 'morphological causatives.' These causatives are formed from the combination of the causative morpheme, *-ân*[47]*-,* with a simple verb, as in *raghsid* 'he/she danced,' yielding the causative *raghs-ân-d* 'he/she made dance.' In this chapter, I claim this causative morpheme to be a root attaching little-v, and propose that specific feature bundles in the verbal structure accounts for the blocking of this morpheme in a number of simple verbs.

[47] In colloquial speech, /â/ is realized as /u/ in the environment preceding a nasal, allowing for the causative morpheme to be pronounced as *–un-* (e.g., *suz-un-d* 'burnt').

Table 16 illustrates both types of verbal structures (with an overt or covert verbalizer) and presents the availability of a morphological causative form for each.

Table 16. Causation Pattern

	Simple verb		*Causative form*	
Overt verbalizer	dozd-i-d	'stole'	*	
	raghs-i-d	'danced'	raghs-un-d	'made dance'
Null verbalizer	rix-∅-t	'spilt'	*	
	suz-∅-t	'burnt'	suz-un-d	'burned'

As we can see, the type of verbalizer present in the structure cannot predict whether the verb has a causative morphological counterpart. Furthermore, there are some verbs that only have a causative form, like *namây**ân**dan* 'bestow,' and in some cases, the causative morpheme doesn't add a causative meaning (e.g., *kub**i**d= kub**ân**d* 'pound'). Previous literature has not tackled this problem. In this chapter, I provide a structural reason for the blocking of the causative morpheme, and confirm that all simple verbs have similar underlying structures. I incorporate the *little-v hypothesis* (Kratzer 1996) and *little-v flavors* (Follie and Harley 2005) to demonstrate a number of new findings that bare on the causative argument in Persian. I argue that Persian simple-verb causatives are formed with a root attaching $_{\text{CAUS}}$ morpheme. And that the incompatibility of the causative affix with certain roots hints at their structural morpheme realization during numeration, or *flavors of v* (Folli and Harley 2002, 2004). I provide a unified analysis for the treatment of all simple verbs and their causative counterparts and illustrate a structural account for the idiosyncratic nature of causatives in Persian. This work follows the DM model proposed by Halle and Marantz (1993, 1994).

The organization of this chapter is as follows: Section 4.1 introduce the problem. Section 4.2 provides background information on causatives in Persian, and presents the data on morphological causatives. Section 4.3 includes the relevant theoretical frame work. Section 4.4 presents the proposed analysis, tests, and a representative structure for causatives, showing that a unified

analysis for all simple verbs and their causative form is available. Section 4.5 concentrates on the literature on Persian causatives, and section 4.6 concludes this chapter.

4.2 Data

This section briefly explains causative constructions, the five types of causative structures in Persian, and a representative list of simple verbs that either take or block the causative morpheme.

4.2.1 Background

Causatives are verbal constructions, in which a verbal morpheme adds an external argument to the sentence. This new agent causes the embedded subject to carry out an act or change of state. (77) is an example of a causative sentence in English.

(77) John made [Bill carry the water].

The causative verb in (77) is *made,* which adds a causer, *John*, to the sentence. *Bill* is the agent causee, who carries out the act of carrying the water, in this construction. Besides using the verb 'make' or other similar verbs, English can also indicate causation in labile verbs like *sink,* which have inchoative/causative alternations with no overt morpheme introducing the external argument. (78a-b) represent this alternation.

(78) a. The boat sank
b. John sank the boat.

(78a) is the intransitive counterpart to (78b). In (78b), *John* is the causer of the sinking of the boat. In (78a), no agent information is provided; the object of 'sink' is in the subject position.

4.2.2 Types of Causatives in Persian

Persian, like many other languages, shows causation in different ways and distinguishes at least 5 types of causatives[48]: labile, lexical, light verb alternations, periphrastic and morphological. Here,

[48] Persian implements all type of causatives except anticausatives (Rasekh-Mahand (2007) qtd. in Jasbi (2009)).

I will briefly introduce all four types of causative constructions employed in Persian, but will concentrate on the last type in this chapter.

The first are the labile causatives (79a-b). Unlike English, labile causatives are a less common type of causative in Persian and only account for a small percentage of causative verbs in this language.

(79) a. shishe shekas-t
window break-past
'the window broke' 'labile: intransitive'

b. Ali shishe ro[49] shekas-t
Ali window RA break-past
'Ali broke the window' 'labile: transitive[50]'

Another common type of causative are lexical items that show causation semantically, such as *kosht* 'kill.' These are lexical direct causatives. The lexical item expresses the idea that the act of killing is completed by an agent, yet there are no overt morphemes that express causation. Furthermore, they do not participate in a transitivity alternation, so they are also unlike labile causatives, which also lack an overt morpheme.

(80) Ali xers-o kosh-t
Ali bear-RA kill-past
'Ali killed the bear'

The third type, (81a-b), is what I will call "light verb alternating causatives". The LV alternating causative in Persian is formed with a complex predicate. Complex predicates are verb forms in Persian that are formed from a nonverbal element (NVE) and a light verb (LV) like *kard* 'do' or *shod* 'become.' (Butt 2001, Karimi 1997a, Folli, Harley & Karimi 2005, Megerdoomian 2012). LV alternating causatives show causativization by alternating the LV element between *shod* and *kard* to form intransitive and transitive verbs respectively. This is the most common type of

[49] *-ra* is pronounced '*-o'*, or '*–ro*' in colloquial speech. It is considered to be a specificity and accusative marker. For a more detailed analysis of *–râ* see Karimi (1996), Ghomeshi (1997b), Karimi and Smith (2019), among others.
[50] Colloquial speech allows the transitive form of *break* to appear as either labile or with *–ân-*.

causative in Persian, and has been called 'equipollent' in Jasbi (2009) and 'non-equative compound lexical causative' in Golfam and Dehghan (2012).

(81) a. bastani âb sho-d
ice-cream water become-past
'the ice-cream melted'

b. âftâb bastani ro âb kar-d
sun ice-cream RA water do-past
'the sun melted the ice-cream'

The fourth type, periphrastic causatives, are also formed using complex predicates. However, the difference between this causative and the light-verb alternating causative described in (81) is the role of the non-verbal element (NVE) in the complex predicate. Periphrastic causatives are formed by using vocabulary items that express causativization in the non-verbal element of the complex predicate, which takes a complement clause. Therefore, periphrastic causatives are always bi-clausal. Additionally, they can also allow the alternation expressed by the LV causatives in the matrix clause, which is depicted in (82a) & (82b). Examples of periphrastic causatives are *vâdâr kard* 'make do' and *majbur kard* 'force do.' (82) presents such an environment.

(82) a. Samâneh Maryam-o **majbur *kard*** (ke) ketab-o be-xun- e
S-NOM Maryam-RA force do that book-RA subj-read-3sg.past
'Samâneh forced Maryam to read the book'

b. Maryam **majbur *shod*** (ke) ketab-o be-xun- e
M-NOM force become that book-RA subj-read-3sg.past
'Maryam was forced to read the book'

The final type of causative is the morphological causative. Persian morphological causatives are formed by the addition of a causative morpheme *–â-/-un-* to the root. These types of causatives are only formed with simple/heavy verbs in Persian[51]. Heavy (simple) verbs are those verbs that

[51] In forthcoming work, I discuss Tajiki and LVs possessing roots, and show where this causative morpheme is seen in the NVE in some CPrs (e.g., *derext shin-**ân-i*** kardan 'tree-planting'), and the LV in certain other CPrs (e.g., *remont kon-**ân**-idan* 'repair doing'). Furthermore, this morpheme allows doubling in Tajiki, and can also form new causative verbs from borrowed lexemes.

do not require a separate light verb element as observed in complex predicates (Butt 2001, Karimi 1997a, Folli, Harley & Karimi 2005). (83a) is an example of the inchoative or intransitive heavy/simple verb, while (83b) depicts the transitivized causative form of this verb. As previously mentioned, this chapter focuses on morphological causatives.

(83) a. xune sux-t-ø
house burn-past-3sg
'the house burnt'

b. Ali xune ro suz-un-d-ø
Ali house RA burn-CAUS-past-3sg
'Ali burnt the house'

4.2.3 Morphological Causatives

The causative morpheme only causativizes a subset of simple verbs. A short list of simple verbs can be found in (84); the verbs that causativize are in bold. I then discuss some generalizations regarding transitivity and animacy of subject. A complete list of simple verbs in Persian and available causative forms follows in Appendix D.

(84)

	Simple verbs	translation
a.	vazidan	blow(breeze)
b.	nemudan	do
c.	mordan	die
d.	**larzidan**	shiver, flicker, tremble
e.	gosastan	tear, break off
f.	**gardidan**	turn, rotate
g.	**keshidan**	drag, draw
h.	qâpidan	snatch
i.	**fahmidan**	understand
j.	**qaltidan**	roll over
k.	shekâftan	split, tear
l.	shostan	wash
m.	sâxtan	make, build
n.	**raftan**	go, move
o.	**residan**	ripen, arrive at
p.	dâshtan	have
q.	xândan	read
r.	**chekidan**	drip
s.	**charidan**	graze

t. **jonbidan** move, shake
u. jestan jump, leap
v. **tâxtan** make gallop (horse)
w. **paridan** jump, fly
x. bastan close
y. afrâshtan raise (a flag)
z. **âmuxtan** teach, learn

The causative morpheme in Persian can combine with either transitive, unergative, or unaccusative[52] simple verbs, as in Table 17 and is blocked in complex predicates in Persian, as in (85)[53].

Table 17. Transitivity and Morphological Causatives

	Simple verb	*Causative*	*Translation*
unaccusative	laqzidan suxtan jushid	laqzândan suzândan jushând	slip burn boil
unergative	paridan neshastan tâxtan	parândan neshândan tazândan	jump, fly sit gallop
transitive	pichidan chasbidan xordan	pichândan chasbândan xorândan	twist, wrap stick eat

[52] As explained in chapter 3, in order to distinguish the two classes of intransitives, I implemented the intentionality test on the verbs by forming sentences in which the subject is described as performing the action on purpose. Unaccusative verbs lack intentionality, while unergative verbs typically imply intentional action on the part of the subject. The following sentences show the application of the intentionality test on two different intransitive verbs. Unergative verbs allow intentionality on the part of the subject as in (Ia), while unaccusative verbs are ungrammatical as seen in (IIa). As you can see in (Ib) and (IIb), the causativized form of both verbs must have an agentive subject.

(I) a. bachhe (amdan) ghalt-id-∅ (unerg)
child (intentionally) role-pseudoInf. 3sg
'The child rolled (intentionally)'
b. Ali bachha ro (amdan) ghalt-un-d-∅
Ali child RA(intentionally) roll-CAUS-past-3sg
'Ali rolled the child (intentionally)'

(II) a. âb (# amdan) jush-id (unacc)
water intentionally boil-past
Intended: 'the water boiled intentionally'
b. Ali ab-o (amdan) jush-un-d
Ali water-RA intentionally boil-CAUS-past

[53] Additionally, following Vendler's classification of verbs (1957), causative morpheme can also attach to different classes of verbs. Below is a short list of verbs in which the causative morpheme can affix to.

Accomplishment	*Stative*	*Achievement*	*Activity*
'shekl' keshid-an	fahmid-an	resid-an	dav-i-d-an
'shape drawing'	'understanding'	'arriving'	'running'

(85)
a.	gery(*-un)	kard-an	‘intended: to make cry’
b.	qalt(*-un)	zad-an	‘intended: to make x roll/tumble’
c.	jâru	kar(*un)d-an	‘intended: to make x sweep’

(85a-b) places the causative morpheme in the NVE, while (85c) places it in the light verb; both positions are unavailable in Persian complex predicates. While Persian doesn’t allow the causative morpheme to appear in CPr constructions, there isn’t any way to predict which simple verbs can take the causative affix and which cannot. Additionally, the subject pattern for transitive verbs doesn’t assist in identifying what blocks the morphological causative in these verbs. In other words, both sets of verbs can have either an animate or inanimate subject, as seen in the examples below. (86a-d) are sentences formed with the verb ‘twist.’ (86a-b) each show that the subject of said verb can be either animate or inanimate respectively. (86c-d) show subject animacy for the causative counterpart. In both, the subject is the causer of the event; however, in (86c), the subject is animate, while in (86d) it is not.

(86) *pichid ‘twist’ / Cause form pichund*

a. Ali xodesh-o tu parde pichid — *animate subj*
Ali self-RA in curtain twisted(turned)
‘Ali twisted himself in the curtain’

b. charx pichid — *inanimate subj*
wheel turned
‘the wheel turned’

c. Zaal charx-o pich-un-d — *animate causer*
Zaal wheel-RA subj-turn-CAUS-pst
‘Zaal turned the wheel’

d. bâd ferfere-ro mi-pich-un-e — *inanimate causer*
wind pinwheel-RA dur-turn-CAUS-3sg
‘the wind is turning the pinwheel’

The following example is of a simple verb that lacks a causative form. (87a) has an inanimate subject, while (87b)’s subject is animate. This verb does not have a causative counterpart.

(87) *shost 'washed' /*Morphological Cause form*

a. bârun piyâdero-ro shos-∅-t *inanimate subj*
rain sidewalk-RA wash-verblzr-pst
'the rain washed the sidewalk'

b. Ali pirhan-o shos-∅-t *animate subj*
Ali shirt-RA wash-verblzr-pst
'Ali washed the shirt'

So far, I have noted that the causative morpheme in Persian attaches to a subset of simple verbs, is not limited by transitivity, and can take both an animate and inanimate causer (87c-b). In order to tease apart the properties of the two types of simple verbs (i.e., the verbs that can causativize vs. those that cannot), this analysis implements two important works which I summarize below before presenting the proposed argument for causatives. The following section will begin by introducing Pylkkänen (2009)'s discussion of causative typology and is followed by the concept of *little-v flavors* first introduced by Folli & Harley (2002).

4.3 Theoretical Framework

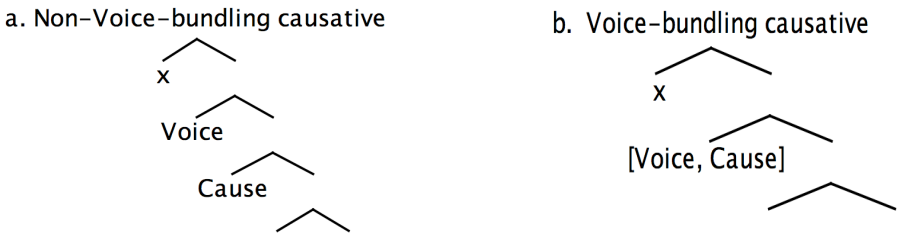
In this section I present Pylkkänen's (2009) causative typology and a brief discussion of flavors of v in Italian and English as suggested in Folli & Harley (2002, 2004). These works are important for a better understanding of the morphological causative construction in Persian. Following Pylkkänen's causative typology, I argue that the causative morpheme *–ân-* is a root attaching *little-v.* Once the position of the morpheme is established, I implement Folli & Harley's work on *flavors of little-v* to provide a structural reason for the blocking of the causative morpheme from certain verbal structures, which is explored in the analysis section.

The organization of this section is as follows: 4.3.1. presents Pylkkänen's (2009) causative typology, I implement her causative typology by putting it in the context of data on Persian in 4.3.2. 4.3.3 discusses the flavors of v in Italian and English as suggested in Folli & Harley (2002, 2004). This is followed by my analysis in section 4.4.

4.3.1 Causative Typology (Pylkkänen 2009)

In her work, Pylkkänen (2009) discusses the typology of causatives. She shows that causativization need not increase the number of arguments to the verb, but always involves a head Cause. This head combines with a noncausative predicate to introduce a causing event. Cross-linguistically, she argues for two variations: Voice-bundling, and selection. Each will be briefly discussed here. Voice-bundling, refers to the "syntactic realization of CAUSE: either CAUSE can occur as its own syntactic head, or it can be 'bundled' with the external-argument-introducing Voice into a complex head" (2009: 84). According to Pylkkänen (2009), Japanese is an example of non-voice-bundling cause, (88a), while English is an example of a voice bundling causative (88b). (examples (88-89) taken from Pylkkänen 2009: 85.)

(88) Variation in Voice bundling



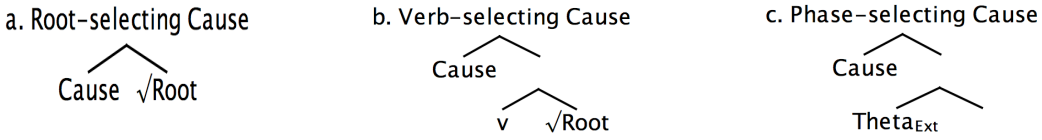
Accoding to Pylkkänen, an unergative causative construction is impossible in a language where Cause cannot independently occur from Voice. (2009:120). English is a language that does not allow unergative root attaching causatives, since the cause head and voice are bundled together (e.g. *John cried the baby[54]). On the other hand, if a language doesn't bundle Cause and Voice heads, such causatives are possible. For example, Japanese lexical causatives allow unergative causatives, as in (89), taken from Pylkkänen (2009).

[54] English requires such a construction to be biclausal by adding another verb that implies causation (e.g., John made the baby cry.)

(89) John-ga kodomo-o nak-asi-ta
John-NOM child-ACC cry-CAUS-pst
'John made the baby cry'

The second cross-linguistic variation she refers to is complement size. Causative heads have been shown to divide into three types. The corresponding trees are in (90). The first type, shown in (90a), is a causative head that selects for a category neutral root and simultaneously acts as the root's verbalizer. The second type, (90b), are causative heads that select for VPs that don't have an external argument, and finally, (90c) is a representative structure for a verbal constituent and its external argument.

(90) Selectional Variation



a. Causatives that select for something smaller than a verb (i.e., category neutral root)
b. Heads that select for VPs without an external argument
c. Heads that select for constituents containing an external argument

For a root-selecting causative head, Table 18, represents the behavior of causatives according to the typology of the language (i.e., voice-bundling or non-voice-bundling).

Table 18. Root-selecting Causative Typology (Pylkkänen 2009)

	Voice-bundling	Non-Voice-bundling
Root-selecting	a. Unaccusative causatives not possible b. Causative based on unergative or transitive impossible. c. Category-defining morphology cannot intervene between the root and Cause. d. Adverbial modification below Cause must be root modification.	a. √ Can have unaccusative causatives b. √ It is possible to make unergative and transitive causatives c. Category-defining morphology cannot intervene between the root and Cause. d. Adverbial modification below Cause must be root modification.

As evident from Table 18, for root-selecting causatives, unaccusative and unergative causatives are only possible in non-voice-bundling languages. In the following section, I apply this typology to Persian, and illustrate that *–ân-* is a root attaching causative in Persian, and will follow Pylkkänen (2009) in assuming Persian to be a non-voice-bundling language.

4.3.2 Causative Typology Applied to Persian

As applied to Persian, I first show *–ân-* to be root attaching. Primarily, nothing intervenes between the causative morpheme and the root in Persian as in (91b). Moreover, in (91a), the overt verbalizer argued for in chapter 3 is shown to be in complementary distribution with the causative affix.

(91) a. bachche xâb-**i**-d-ø
child sleep-verblz-tense-3sg
'the child slept'

b. Samaneh bachche-ro xâb-**un**-d-ø
Samaneh child-RA sleep-little-v-tense-3sg
'Samaneh put the child to sleep'

The following example, shows secondary evidence of complementary distribution by virtue of the lack of alternation available in the past tense causative forms.

(92) *suz/sux 'burn'*
e. ghazâ dâr-e mi-suz-ø-e (present)
food is dur-burn-present.verblz-3sg
'the food is burning'

f. ghazâ **<u>sux</u>**-Ø-t (past)
food burn-past.verbalizer-pst
'the food burnt'

g. ghazâ-ro **<u>suz</u>-un-**d-ø (past causative)
food-RA burn-CAUS-pst-3sg
'(3sg) burnt the food'

The tense for both (92b) and (92c) is [+past]; however, we can observe the lack of root alternation in the causative form (92c), confirming that there is an available position adjacent to the root, and demonstrating that the root alternation is related to the verbalizer not the past tense, as the causative little-v doesn't initiate any alternations (unlike the verbalizer discussed in chapter 2).

For a root-selecting Causative head, (90a), I presented Pylkkänen's chart, Table 18, depending on whether the language is voice-bundling or not (2009:87). It is presented here again, as Table 19.

Table 19. Root-selecting Causative Typology (Pylkkänen 2009)

	Voice-bundling	Non-Voice-bundling
Root-selecting	e. Unaccusative causatives not possible f. Causative based on unergative or transitive impossible. g. Category-defining morphology cannot intervene between the root and Cause. h. Adverbial modification below Cause must be root modification.	e. √ Can have unaccusative causatives f. √ It is possible to make unergative and transitive causatives g. Category-defining morphology cannot intervene between the root and Cause. h. Adverbial modification below Cause must be root modification.

we can see that items (c) and (d) in the voice-bundling and non-voice-bundling columns are identical and don't provide us with any characteristic distinctions between voice and non-voice bundling causatives. The first two items, however, are relevant. Table 21, notes that in a non-voice-bundling language, unaccuastive, unergative and transitive causatives are possible. Persian, I have shown, does allow constructions like '*John slept the child'* and '*John cried the baby'* which are

not possible in English[55], but acceptable in Persian and mean 'John put the child to sleep' and 'John made the baby cry' respectively. Given that morphological causatives in Persian can be formed from unaccusatives (item a) and unergatives and transitives (item b), as shown in Table 19, I will follow Pylkkänen (2009) in assuming this morpheme in Persian to be a non-voice-bundling cause head.

So far, I have presented evidence of the complementary distribution between the causative morpheme and what has been independently shown to be a root-attaching verbalizer. I follow Pylkkänen's (2009) typology to argue that the data on Persian simple verb causatives points to a root-selecting, non-voice-bundling causative head. There is one more piece of the puzzle that must be explored before delving into the analysis and that is the observation made by Folli and Harley (2002, 2004) concerning the behavior of agentive and causative verbs in English and Italian: I briefly summarize their findings in the following section before returning to the data on Persian.

4.3.3 Flavors of v

Folli and Harley (2004) argue for a 'typology of v' to account for the inability of some verbs to take inanimate subjects. They observe that while the *destroy-class* of verbs allow inanimate agents (15a), the *consumption-class* of verbs generally do not (93b).

(93) a. the sea destroyed the beach.
b. *the sea ate the beach.
c. the sea ate away the beach.
(Folli & Harley 2004:1-2)

Moreover, they noted that it is possible in certain circumstances for consumption verbs to take inanimate subjects, as long as there is "a change in the event structure of the predicate." (2004:2),

[55] The Cause head in English selects for both Cause and Voice, grouping two *interpretable* features into one syntactic head. However, Voice and Cause cannot combine through *Function Application* or *Event Identification* to introduce both a causing event and an external argument (i.e., type mismatch). Hence, Pylkkänen considers Cause and Voice to be a syntactic unit only (i.e., not a semantic unit). (Pylkkänen 2009: 99-101).

as in (93c). In the example, (93c) above, this is achieved by adding the particle 'away' which behaves like a small clause (Similar to resultative constructions analyzed in Chomsky 1981, Stowel 1983, Kayne 1985, among others qtd. in Folli & Harley 2004:15). They further show that, cross-linguistically, this change in event structure is also noted in Italian, in which the reflexive *si* appears in the construction in addition to a change in the auxiliary (Folli and Harley 2004: 2).

(94) a. Il mare si é mangiato la spiaggia
The sea REFL is eat.PST the beach
b. *Il mare ha mangiato la spiaggia
The sea has eat.PST the beach

Folli and Harley argue that a lexical restriction is needed to account for the fact that not any verb can be inserted into any structure, and suggest a restriction on "light semantic primitives" (2004:19), as the observed changes are systematic, but not necessarily attributed to syntax.

They further note a similar problem proposed by animacy restrictions: that verbs which possess an 'agentive' or 'cause' external arguments, do not necessarily "combine with both animate and inanimate initiators" (2004:19).

To capture the restriction on the difference between cause and agent, they propose a new typology of v. Namely, they proposed three variants (i.e., flavors) of little-v: vDO (Hale and Keyser 1993) vBECOME, and vCAUS. They claim that when the structure is formed with vDO, there is an animacy restriction imposed on the subject. However, when it is vCAUS, the subject can be either animate or inanimate.

I follow Folli & Harley (2004) in assuming verbs are capable of structurally specifiying a vDO flavor. I claim *–ân-* to be an overt verbalizer VI with [+cause] properties (i.e., vCAUS). This VI can be selected to add causation, and often an external agent to the construction. The morpheme is blocked in verbs that structurally specify a vDO. This is shown using volitional, and agentivity tests to confirm the lack of subject-demotion in the clause, which will be shown in section (4.4.2.1).

4.4 Proposal

In this chapter, I claim that the causative morpheme, *-ân-,* is a root attaching little-v. I show that this causative morpheme is in complementary distribution with the little-v VIs argued for in chapter 2 and 3. I further propose that the causative morpheme is unable to combine with roots that have volitional restrictions on their subject. (i.e., roots that have a vDO in their structure). This is borne out, as seen in section 4.4.

This section is organized as follows: 4.4 lays out my claims and structure of the following section. 4.4.1 contains the set of little v Vocabulary Items I argue for in chapter 2 and 3, and introduces *–ân-* as a new VI in competition for the little-v slot. This is followed by a set of tests in 4.4.2. 4.4.3 applies the concept of 'little-v flavors' to Persian. 4.4.4 presents the structure for simple verbs in Persian taking the new VI, *-ân-,* into account, while 4.4.5 summarizes the data under the new proposal. 4.4.6 makes a number of rudimentary predictions based on the findings in this chapter, and section 4.4.7 concludes with a final unified analysis of simple verbs.

4.4.1 Little-v Vocabulary Items

In the previous chapters I introduced the null verbalizer (chap 2) that initiated root alternations in the past tense. I also introduced three overt verbalizers: *-i-,* which has been incorrectly analyzed as the *pseudo-infinitive* morpheme, and *-s* and *–f* which have not been discussed in the literature. These little-v vocabulary items have been compiled into a list in (95).

(95) VI list for simple verbs

a. ∅ ↔ [+past] a past tense verbalizer that initiates root alternations in the roots it attaches to. (changes occur depending on phonological form/final phoneme)

b. –i- ↔ [+past] an overt ELSEWHERE past tense morpheme. Used to form nouns, adjectives, etc into verbs.

c. –s ↔ [+past] an overt verbalizer. Only applies to a small number of verbs (no distinct specifications found)

d. –f ↔ [+past] an overt verbalizer. Appears to be the alternative to –s. Less common, and usually used when using –s would result in a homophonous pair.

Now that we have suggested that the causative morpheme is root attaching and in complementary distribution with the VIs in (95), I propose the causative morpheme to also be a root attaching little-v VI, as shown in (96).

(96) –un- ↔ [+cause] used to express causation in the sentence.

When forming simple verbs, roots have a choice of any one of the VIs in (95). However, the choice of the VI in (96) is not as obvious. This is because the choice of the causative VI is not available to all verbs, and cannot be distinguished based on the type of VI it takes as a non-causative form, as seen in (97).

(97)

VI	non-causative	causative	meaning
-s-	geri-s-t	ger-yun-d	cry
-s-	ârâ-s-t	------	beautify
-∅-	neshas-∅-t	nesh-un-d	sat
-∅-	shos-∅-t	-----	wash
-i-	qalt-i-d	qalt-un-d	roll, tumble
-i-	vaz-i-d	-----	blow (breeze)

Table 20 is a list of simple verbs separated by whether they are capable of combining with the causative morpheme or not.

Table 20. Simple Verbs and Causative Behavior[56]

verbs that take the causative morpheme		***verbs that block the causative morpheme***	
paridan	jump, fly	bastan	close
neshastan	sit	afrâshtan	raise (a flag)
laqzidan	slip, shake	vazidan	blow(breeze)
suxtan	burn	nemudan	do
jushid	boil	gosastan	tear, break off
pichidan	twist	qâpidan	snatch
chasbidan	stick	shekâftan	split, tear
xordan	eat	shostan	wash
larzidan	shiver, flicker, tremble	sâxtan	make, build
gardidan	turn, rotate	xândan	read
keshidan	drag, draw	jestan	jump, leap

[56] Suppletive pairs like *mordan* 'die' & *koshtan* 'kill,' or *âmadan* 'come, arrive' & *âvardan* 'bring' would not combine with the causative morpheme due to the existence of their counterpart suppletive form.

fahmidan	understand	âshamidan	drink
qaltidan	roll over	âfaridan	create
raftan	go, move	âvixtan	hang, suspend
residan	ripen, arrive at	bâxtan	lose
chekidan	drip	bâridan	rain
charidan	graze	bâftan	knit
jonbidan	move, shake	baxshidan	grant, forgive
tâxtan	gallop (horse)	bordan	take away
âmuxtan	teach, learn	porsidan	ask
xaridan	itch	javidan	chew
pushidan	dress, cover	jahidan	leap
tarsidan	fear	xâstan	want
tar(a)kidan	pop(a balloon), break	duxtan	sew
jonbidan	move, shake	didan	see
chapidan	be jammed	shekoftan	open (bud), cheer up
charxidan	rotate	shemordan	count
xâbidan	sleep	feshordan	squeeze
davidan	run	kandan	dig, up root, pick
geristan	cry	yâftan	find
residan	ripen, arrive at		
raghsidan	dance		
ranjidan	be annoyed		
shekastan	break, shatter		
kubidan	pound, beat, knock out		
harâsidan	scared		
bargashtan	return		

I explain the blocking of this causative morpheme in some simple verbs within the DM framework by arguing that structures with [+volitional] feature requirements on the subject cannot merge with a [v.caus] bundle. Following Folli and Harley (2005), I claim these verbs with [+volitional] feature requirements on their subjects to merge with vDO during numeration, hence blocking any VI that is overspecified for that feature bundle. In other words, since VIs with features not present in the feature bundle do not qualify for insertion at the terminal node, the v.CAUS VI is overspecified and blocked from insertion, while the VIs with a [v] feature (i.e., the list of VIs mentioned in this work: *-i-, ø, -s, -f)* can compete for insertion under a vDO morpheme. I tackle this by using two tests: agentivity and obligation.

4.4.2 Tests

Two tests, Agentivity and volition of the subject and the obligation test, are shown here to illustrate the difference between verbs that have a vDO in their structure and verbs that don't.

4.4.2.1 Agentivity and Volition of Subject

In Persian, subjects of verbs that block the causative morpheme have a certain degree of volition. These subjects are usually agentive, and while they can be *made* or *forced* to do the event in question, the language recognizes their volition by way of sanctioning only periphrastic causatives (i.e., biclausal constructions). (98) is a list of *–un-* blocking simple verbs.

(98)	a.	dozd-i-d	'steal'	*dozd-un-d
	b.	andax-∅-t	'drop'	*andaz-un-d
	c.	sepor-∅-d	'entrust'	* sepor-un-d
	d.	gozash-∅-t	'let'	*goz-un-d
	e.	baf-∅-t	'knit'	*baf-un-d
	f.	rix-∅-t	'spill'	*riz-un-d

Two of the verbs from (98) have been selected to illustrate the addition of another verb to the sentence, rendering the structure biclausal.

(99) a. Ali ketâb-o **dozd-i-d**
Ali book-RA steal-verblizer-past tense
'Ali stole the book'

b. Hâshem ali$_j$-ro **majbur kard** (ke) pro$_j$ ketâb-o be-**dozd**-e
Hâshem ali-RA force do (that) book-RA SUBJ-steal-3sg
'Hâshem forced Ali to steal the book'

(100) a. man naqâshi-ro be dust-am **sepord**-am
1sg painting-RA to friend-1sg entrust-1sg
'I entrusted the painting to my friend'

b. zendegi **majbur-am$_j$ kard** (ke) pro$_j$ naqâshi-ro be dust-am be-**spor**-am
life force-1sg do (that) painting-RA to friend-1sg SUBJ-entrust-1sg
'Life forced me to entrust the painting to my friend'

On the other hand, *-ân-* taking verbs remain mono-clausal, and the demoted subject is shown to have little to no volition over the action even when animate.

(101) a. bachche raghs-i-d
child dance-verblz-past
'the child danced'

b. Ali bachche/arusak-ro raghs-un-d
Ali child/doll-RA dance-CAUS-past
'Ali danced the child/ the doll.'

(102) a. xune sux-∅-t
house burn-past
'the house burnt'

b. Ali xodesh-o/xune-ro suz-un-d
Ali self-RA/house-RA burn-CAUS-past
'Ali burned himself/burnt the house'

4.4.2.2 Obligation Test

In Folli and Harley (2007), the 'obligation effect' is discussed in regards to flavors of v. They claim that in Italian, when vDO heads the vP, it will take an "intentional agent subject," and "the only way to cause an agent to intentionally do something is to oblige it to" (2007: 212). Their observation holds in Persian as well. They argue that while the transitive form can have either an intentional or unintentional external argument (103), these verbs do not allow a nonintentional subject to embed, (103b). *andâx-t* 'throw,' and *gozâsht* 'let' are *-ân-* blocking verb, both intentional and nonintentional subjects are acceptable as in (103a) and (104a); however, when the verb is embedded, *pro* can only be co-indexed with an animate, intentional matrix object, as in (103b) and (104b).

(103) a. bâd/Ali ketâb-o andâx-∅-t
wind/Ali book-RA throw-verblz-pst
'The wind/Ali threw the book'

b. Bâbak Ali_j/*$bâd_k$-o majbur kard $pro_{j/*k}$ ketâb-o be-ndâz-∅-e
Bâbak Ali/*wind-RA force do book-RA SUBJ-throw-verblz-3sg
'Bâbak forced Ali to throw the book/*Bâbak forced the wind…

(104) a. zelzele/rahbar-e kârvân ye rah-e barik-i barâ-mun bâz gozâsh-∅-t
earthquake/leader-EZ caravan one way-EZ narrow-indf for-1pl open let-verblz- pst
'the earthquake/caravan leader left a narrow pathway open for us.

b. khalife rahbar-e kârvân ro/*zelzele$_k$-ro vâdâr kard ke pro$_{j/*k}$ rah-e
king leader-EZ caravan RA/*earthquake-RA make do that path-EZ
barik-i barâ-mun bâz be-zâr-∅-e
narrow-indf. For-1pl open SUBJ-let-verblz-3sg.
'The king forced/made the caravan leader leave a narrow path open for us.'
(*forced the earthquake)

All verbs in the right column of Table 20 must either be obliged to do something, by way of a periphrastic causative, or are completely unacceptable in such contexts, as seen in (105).

(105) Maryam Ali-o majbur kard mush-o be-kosh-e
Maryam Ali-RA force do mouse-RA SUBJ-kill-3sg
'Maryam forced Ali to kill the mouse'

(106) *Ali bâd-o majbur kard be-vaz-e
Ali wind-RA force do SUBJ-blow-3sg
Intended: 'Ali forced the wind to blow'

While the class of *-ân-* taking verbs must also be animate when embedded under a periphrastic causative, this test confirms that the verbs with a vDO structure can only be obliged to do something. Of course, verbs like *bârid* 'rained,' and *vazid* 'blew (breeze)' don't have an animate agent. However, the semantics of these verbs is such that raining, or the blowing of a breeze cannot be delegated to another agent, animate or not.

4.4.3 Proposed Flavors of v in Persian

Analyzing the nature of the morphological causative, I have suggested two independent claims above: First, the causative morpheme, *–ân-*, is root-selecting and adds causation to the verb. Second, it only combines with roots that do not specify any volitional features on the subject. Two essential observations for this analysis are: the claim that *–i-* (the overt verbalizer) is in complementary distribution with *–ân-* in colloquial speech and, second, causative constructions

with *–ân-* always show direct causativization. The notion of direct causation is important as it specifies only one VoiceP in the causative structure, and indicates lack of volition for the original subject of the verb. (i.e., before causativization, *Ali* is the subject in *ali raghsid* 'ali danced'. In the causative construction, the original subject, *Ali,* appears in the vP, accusative marked with *–ra,* and a new causer argument is added to the construction, as in (107).)

(107) a. Ali raghs-i-d-∅
Ali dance-verblz-pst
'Ali danced'

b. Dâvud Ali-ro raghs-un-d-∅
Dâvud Ali-RA dance-CAUS-pst-3sg
'Dâvud danced Ali'

Using the two observations presented above, I argue that the blocking of *–ân-* is contingent upon the flavors of v: Simple verbs that allow the attachment of *–ân-* do not have a vDO morpheme as the sister to the root phrase, while the verbs that block the causative morpheme have a vDO head that contributes the volitional meaning and blocks any direct causativization. It is an idiosyncratic property of verbs like *raghs* 'dance' in Persian that their structure does not have a vDO little-v, thereby permitting these unergative verbs to causativize with *–ân-*. Following Folli and Harley (2005), I propose the following tentative list of little-v flavors for Persian.

(108) *Persian Flavors of v*

a.	vDO	*dozd-i-d 'stole' ; shos-t 'washed'; etc.*
b.	vCAUS	*raghsund 'made dance'; neshund 'made sit'*
c.	v	*raghsid 'danced' ; neshast 'sat'*

Persian does implement a vMAKE flavor for some CPrs (Megerdoomian 2002), and some simple verbs may be composed of vMAKE, as in sâx-t 'made.' However, this is outside the scope of this paper, as verbs with vMAKE would also block the causative morpheme and need not be distinguished from vDO verbs at this stage.

4.4.4 Proposed Causative Structure

Below is an example of a verb that I assume structurally specifies vDO (i.e., blocks the morphological causative). A representative structure with inserted Vocabulary Items is presented in (109b). (109a) shows the verb 'wash' with its null verbalizer, while (109b) shows the structure of the sentence, illustrating that this verb is composed of a little-vDO and takes the null vocabulary item, which I illustrated in chapter 2 initiates changes to the root, changing *shur* to *shos*.

(109) a. Ali sib-o shur-ø[57]-ø
Ali apple-RA wash-verbliz-PST-3sg
'Ali washed the apple'

b. $[_{TP}[_{vP}$ ali $[_{\sqrt{/VP}}$ sib-o shos] $[_{vDO}$ ø] $][_{T}$-t-3sg]]

On the other hand, if the feature bundle [v.caus] merges with the Root Phrase during numeration, the terminal node will be specified for [v.caus], allowing the causative VI to enter the competition for insertion at the terminal node. The more specified VI will win the competition and the terminal node will be realized as *–ân-*, as in (110b), which is the causative counterpart of (110a).

(110) a. $[_{TP}[_{vP}$ $[_{\sqrt{/VP}}$ bachche raghs] $[_{v.}$ -i-] $][_{T}$-d]]
b. $[_{TP}[_{vP}$ ali $[_{\sqrt{/VP}}$ bachche-ro raghs] $[_{v.cause}$-ân-] $][_{T}$-d]]

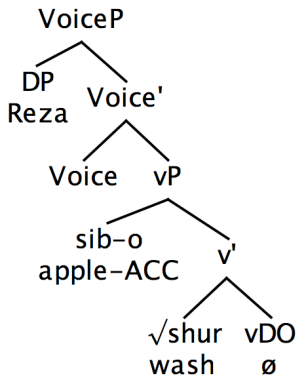
Given this proposal, I claim that <u>some</u> unergative and transitive verbs, while agentive, lack a volitional feature that is supplied during numeration, a vDO flavor discussed in 4.3.3. Verbs <u>with</u> this feature bundle assign [+volition] to the structural subject of the construction, effectively blocking the causative VI from competing to fill the terminal node, while structures that lack this feature can select for the causative Vocabulary Item, since they can merge with a [v.cause] bundle during numeration.

[57] Recall from chapter 2 that the null verbalizer initiates changes to the root, here forming *shos* from *shur*.

The trees below represent the structures for vDO, vCAUS, and little-v with corresponding sentences[58]. (111b) is the structure for a simple transitive verb (111a) with an underlying vDO.

(111) a. Rezâ sib-â-ro shos-∅-t
Rezâ apple-pl-RA wash-vDO-past
'Rezâ washed the apples'

b.



If these verbs have a vDO head, it follows that when these roots appear as simple verbs, they block *–ân-*. Therefore, transitive roots with a vDO flavor cannot take the morphological causative affix. Certain transitive simple verbs confirm this analysis. Namely, verbs that block *–ân-,* such as *andaxtan* 'drop,' and *dozdidan* 'steal,' in which the subject must retain volition at all times also appear to have a vDO head. In (112), the external argument of the verb, 'Kiyaan,' is responsible for dropping the egg.

(112) Kiyaan toxm-e morgh-o andax-$_{vDO}$∅-t
Kiyaan egg-EZ chicken-RA drop-$_{vDO}$∅-past
'Kiyaan dropped the egg'

[58] 1) I follow Harley (2013) in allowing roots to take arguments. 2) trees represent internal structure of the verb based off of the surface structure by placing little-v and Tense to the right. (allowing for [√raghs-$_{v}$i-$_{T}$d], instead of [$_{T}$d-$_{v}$i-√raghs]). See Karimi (2005), Taleghani (2010), and Kabiri (forthcoming) among others for the structural location of tense, aspect and negation in Persian.

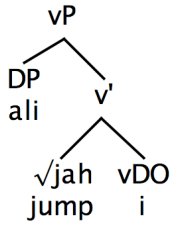
During numeration, the verb *andâx-t* 'dropped' structurally selects a vDO flavor. This vDO structure dictates volitional restrictions on the structural subject. Similar to the transitive simple verbs above, some unergative simple verbs also have agentive requirements on their structural subject. These verbs cannot lose volition by becoming the causee argument in a morphological causative. (113) presents 3 such verbs.

(113)	a.	jah-v_{DO}i-d	'jumped'	*jah-un-d
	b.	xarâm-$_{vDO}$i-d	'strutted'	*xarâm-un-d
	c.	mân-$_{vDO}\varnothing$ d	'stayed'	*mân-un-d

The verbs in (113) must have a vDO morpheme to block the causative affix from appending. Additionally, the structural subject of these verbs must always have volition, (114).

(114) a. Ali jah-i-d
Ali jump-verblizer-pst
'Ali jumped'

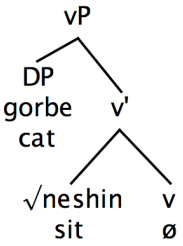
b.

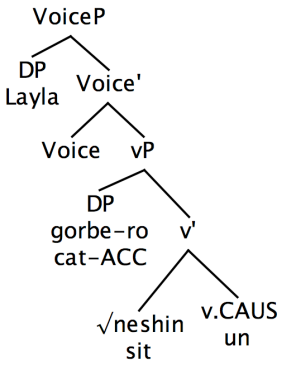


Example (115) below, illustrates corresponding structures for causative and noncausative forms for an unergative verb.

(115) a. gorbe neshas-∅-t
cat sit-verblizer-pst
'the cat sat'

b. Layla gorbe-ro (ru zamin) nesh-un-d
Layla cat-RA (on ground) sit-caus-pst
'Layla sat the cat down (on the ground)'



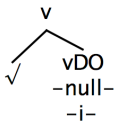


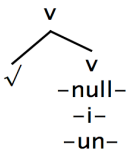
4.4.5 Recap: VIs and Little-v Flavors

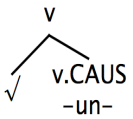
The main purpose of this chapter is to account for what blocks the causative morpheme in certain verbs. Additionally, I showed the causative morpheme to occupy the same position adjacent to the root, similar to the overt and covert verbalizers argued for in chapters 2 and 3. The little-v flavors are selected during numeration and are part of the structure, while the choice of overt or covert verbalizer is part of the VI selection from list 2 (DM). Representative structures are presented in (116).

(116) *Possible flavors of little-v and VI choice*

a. vDO flavor *b. little-v flavor*







4.4.6 Predictions and Implications

The proposed structure for simple verbs in this chapter makes certain predictions regarding unaccusatives, transitives, and available passive forms for these verbs that are discussed below. I

end this section with a revised unified picture of simple verbs.

4.4.6.1 Unaccusatives

According to the analysis presented here, unaccusatives do not structurally have subjects to specify any restrictions on it, and therefore should allow a vCAUS head. This is borne out. Most unaccusative heavy verbs actually permit the root-attaching causative morpheme. Unaccusatives by definition do not have an agentive subject. Therefore, there is no vDO in the inchoative form of the verb to block the causative VI. The causative morpheme *–ân-* merges with the root phrase and adds the agentive property to the transitive counterpart of the verb through the addition of a causative morpheme.

(117)	a. tark-i-d	pop (a balloon)	tark-un-d	make something pop
	b.jush-i-d	boil	jush-un-d	make boil
	c. tars-i-d	fear	tars-un-d	frighten
	d. chap-i-d	be jammed	chap-un-d	cram, jam

Of course, there are two unaccusative simple verbs, *ofta-d* 'fall,' and *mor-d* 'died' that can't be causativized. These intransitive roots appear to have a suppletive causative equivalent, as in (118)[59].

(118)	a.	oftâ-d	b.	andâx-t
		fall-past-inf		drop-past-inf.
		'(to) fall'		'(to) drop'

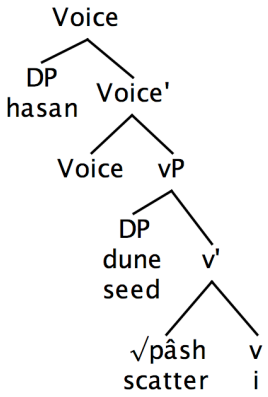
I speculate that the unavailability of a CAUS form for (118a) is due to the existence of the suppletive form, which blocks the application of the productive causative form via the Elsewhere condition. In essence, I am assuming that these verbs are in a suppletive causative alternation.

[59] In (118), *oftâd* can be applied to animate or inanimate subjects (*sib/ali oftâd*). Similarly, *andâxt* can have an animate or inanimate subject (*bâd/ali sib-o andâxt*). *andâxt* doesn't require intentionality on the part of the subject, and so can have animate and inanimate subjects. For an intentional cause, the verb *hol dâd* 'push give' is used.

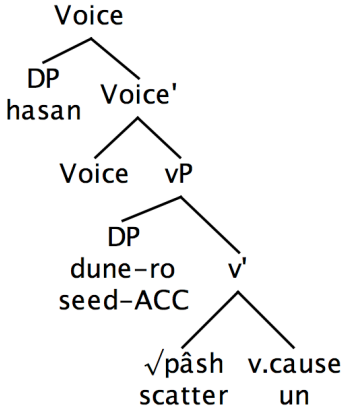
4.4.6.2 Transitives

The analysis provided here also makes predictions about the transitive morphological causatives. We established that VoiceP is separate from the cause head (i.e., non-voice bundling language). These transitive verbs have an agentive subject, but no volitional restrictions are imposed on it. Since the transitive simple verbs already have an agent, or VoiceP in the structure, the causastive morpheme can combine with it, and only adds intentionality on the part of the subject already present in the construction; an optional goal or beneficiary arguments can be added to these causatives. Example (119) shows the trees for the transitive and causative forms for the verb *scatter*.

(119) a. Hasan dune pâsh-i-d
Hasan seeds scatter-vrbl-pst
'Hasan scattered seeds'



b. Hasan dune-ro pâsh-un-d
Hasan seeds scatter-CAUS-pst
'Hasan scattered the seeds' (intentional)



Therefore, when a causative morpheme is added to a verb with a transitive structure, CAUS is able to add intentionality to the agent already responsible without adding any arguments. The intentionality argument is strengthened by the fact that (119b) must appear with *–ra*, which is a specificity and definite marker in Persian[60].

[60] While *-ra* has nothing to do with intentionality: *ali man-ro did* 'Ali saw me,' and *ali man-ro shenâkht* 'Ali recognized me,' a number of native speakers express that they prefer the accusative marker in the causative

4.4.7 Unified Analysis of Simple Verbs (Final)

We now have a unified analysis of simple verbs regardless of causativity or alternations. In chapter 3, we established [√ +verbalizer] as the underlying structure for all verbs. In this chapter, we included another VI, *-ân*, that has a [+causative] meaning, and proposed little-v flavors to account for the blocking pattern for the morphological causative.

In Persian, all simple verbs are formed from [a root + a verbalizer + tense] (e.g.,√raghs +i+d). The flavor of the verbalizer dictates whether the causative morpheme is blocked or not. The list of verb types with the same structure include the alternating and non-alternating simple verbs and any available morphological causatives. Furthermore, we now have an explanation for the causative forms that have a paradigm gap: while these verbs don't get a volitional feature during numeration, the semantics of the verb calls for complete volition of the event described by the verb. Therefore, the most appropriate VI to express this volition is the causative VI, as in (120). These verbs lack an inchoative form for semantic reasons.

(120) a. ___/ chelândan 'to squeeze'
b. ___/ namayândan 'to reveal, show'
c. ___/gonjândan 'to place, insert'

For example, adding *amdan* 'intentionally' to all three verbs in (120) seems redundant, while adding *eshtebâhi* 'on accident' renders the sentence as odd or ungrammatical, as seen in (121).

(121) a. Ali mâst-o amdan chel-un-d
Ali yogurt-RA intentionally squeeze-cause-pst
'ali intentionally squeezed the yogurt' (e.g. to make greek yogurt)

b. Ali mâst-o eshtebehi chel-un-d
Ali yogurt-RA accidently squeeze-cause-pst
?? 'Ali accidently squeezed the yogurt.'

construction. For the author, *-ra* is optional in both constructions in (119), and emphasizes object specificity when present.

This confirms that (whether these lexemes are stored in memory or not) causatives in Persian are not necessarily formed from the simple verb, but selected for during numeration. The following section presents previous work on Persian causatives, and section 4.6 concludes this chapter.

4.5 Literature

Dabir-Moghaddam (1982) worked within the LFG framework, and provided a comprehensive description of Persian causatives, which is included here, followed by a brief translation-summary of Ahangari (2009), which discusses causative constructions under the minimalism framework.

4.5.1 Dabir-Moghaddam (1982)

Dabir-Moghaddam separates causatives into two types: periphrastic causatives and lexical causatives. Periphrastic causatives are biclausal and are further divided into *Nominative-Subjunctive* (122-123), and *Accusative-Subjunctive* (124), with the *Nominative-Subjunctive* group being further separated into *unmarked causatives* (122), and *permissive causatives,* (123). The author claims that the *Accusative-Subjunctive* group expresses direct causation, while the *Nominative-Subjunctive* group has no such requirements.

The first type, the *unmarked causative* is formed with a nominal NVE (nonverbal element) and the LV *shodan* 'became,' as seen in (122). The term "unmarked" represents the fact that the causative is unrestricted in regards to a particular semantic or syntactic feature, here animacy of the embedded subject; inanimate embedded subjects are also possible. Examples are from Dabir-Moghaddam (1982).

unmarked causative

(122) in zan *ba'es shod-ø* [ke Ali behtarin dust -am-ra be-kos -ad]
this woman cause became-subj that Ali best friend-my-RA SUBJ-kill-3sg
'This woman caused Ali to kill my best friend'

The other Nominative-Subjunctive Causative is the *permissive causative*, which is a bi-clausal construction formed with a simple verb, as in (123). This verb has the property of only taking full clauses as its complement.

permissive causative

(123) a. pirmard *gozâsht-ø* [ke bachche-ha u-ra be taraf-e degar-e xiabân be-bar-and]
oldman let-3sg [that child-PL he-RA to side-EZ other-EZ street SUBJ-take-3pl
'the old man let the children take him to the other side of the street.'

The other type of periphrastic causative in Persian observed in this work is the *coercive causatives,* (124), which is the only type of *Accusative-Subjunctive causative*. According to the author, *coercive causatives* require a direct object complement and a prepositional complement that describes an action (i.e., active clause, or infinitival nominalized version).

Coercive causative

(124) mâdar bachche-ha-ro (be in) vâdâr kard [ke ghazâyeshun –ro bo-xor-an
mother child-PL-RA to this force do that food-3pl.Poss-RA SUBJ-eat-3pl
'mother forced the children to eat their food'

Rating the periphrastic causatives based on the number of required restrictions, Dabir-Moghaddam concludes the discussion by stating "Unmarked Causatives convey the most general type of causation, Permissive Causative a lesser general type of causation, and Coercive Causatives the most restricted type of causation in the periphrastic causative system of Persian" (1983:87).

On the other hand, according to Dabir-Moghaddam, lexical causative are of three types: *root causatives, morphological causatives and auxiliary causatives.* The first type *root causatives* can be either "identical" or "non-identical." *Identical root causatives* are lexical causatives that do not change their form. For example, *shekast* 'break' in the intransitive and transitive forms.

Non-identical root causatives consist of vocabulary items like *mord* 'died' and *kosht* 'killed.' The most productive class of causatives in Persian are *auxiliary causatives* which are complex predicate alternations (e.g., *tamiz kard, tamiz shod*). Finally, morphological causatives are formed

by "adding the suffix *–ân-* to the stem of the non-causative counterpart" (1983:92). (125) is a summary of the different types of causatives discussed in Dabir-Moghaddam (1982).

(125) *Causative types in Dabir-Moghaddam (1982)*

Periphrastic
- a. Nominative-Subjunctive Causatives:
  - (i) Unmarked Causatives
  - (ii) Permissive Causatives
- b. Accusative-Subjunctive Causatives:
  - (iii) Coercive Causatives

Lexical
- c. Auxiliary Causatives
- d. Morphological Causatives
- e. Root Causatives

After describing the syntactic and semantic characteristics of causatives in Persian, Dabir-Moghaddam provides an analysis of the lexical causative data from a Lexicalist standpoint, using a "slightly modified version of the Lexicalist Hypothesis stipulated by Jackendoff (1975)". Jackendoff's proposal included: 1) a set of fully specified lexical entries, which provides information about the words that exist in the given language and 2) a set of redundancy rules. What *is* included in each lexical entry is the phonological representation, the syntactic features, and its semantic information. Lexical entries for *poxtan* 'cook' and its causative counterpart are presented in (126), while (127) shows a semantic redundancy rule.

(126) *lexical entry for identical-root causative*

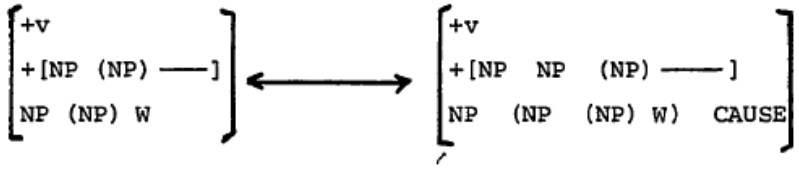
a. $\begin{bmatrix} /poxtan/ \\ +v \\ +[NP_1 \text{ ——}] \\ NP_1 \text{ COOK} \end{bmatrix}$ b. $\begin{bmatrix} /poxtan/ \\ +v \\ +[NP_2 \ NP_1 \text{ ——}] \\ NP_2 \ (NP_1 \text{ COOK}) \text{ CAUSE} \end{bmatrix}$

(127) *redundancy rule*

$$\begin{bmatrix} +v \\ +[NP_1 \text{ ——}] \\ NP_1 \ W \end{bmatrix} \longleftrightarrow \begin{bmatrix} +v \\ +[NP_2 \ NP_1 \text{ ——}] \\ NP_2 \ (NP_1 \ W) \text{ CAUSE} \end{bmatrix}$$

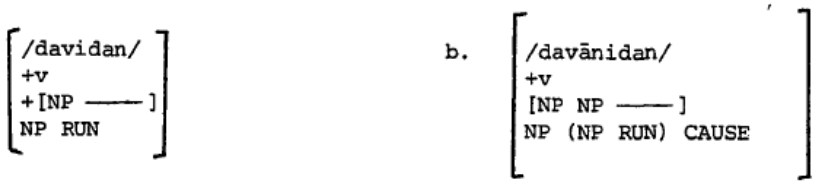
The semantic redundancy rule in (127) shows the relationship between the verb and its causative. The redundancy rule in (127) can be modified to account for the semantic similarities that underlie all lexical causative verbs, as in (128).

(128) *Modified redundancy rule*



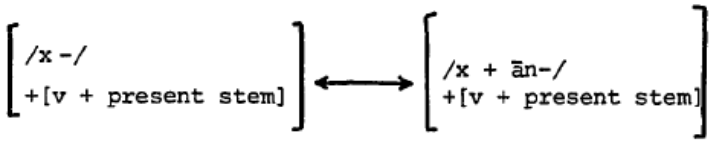
According to the Lexicalist Hypothesis, each word in the language has its own individual entry. Therefore, when extending the Lexicalist analysis to morphological causatives and their counterparts as in (129a-b), each verb and its causative get their own separate entries.

(129) *lexical entry for simple verb and causative form*



The relationship between the two forms is expressed with morphological and semantic redundancy rules. (130) illustrates the redundancy rule needed for morphological causatives. The semantic redundancy rule mentioned in (128) is also incorporated.

(130) *morphological redundancy rule*



It comes as no surprise that the Lexicalist Hypothesis deals with complex predicates in the same fashion, namely providing two separate entries, (131a) & (131b) and a generalized morphological redundancy rule to illustrate the relationship between the two entries, (132). The same semantic redundancy rule from (128) also applies to these verbs.

(131) *non-casual and casual Auxiliary verbs*

a. [/nārāhat {budan / šodan} /
+ v
+[NP ———]
NP BE/BECOME ANGRY]

b. [/nārāhat kardan/
+ v
+[NP NP ———]
NP (NP BE/BECOME ANGRY) CAUSE]

(132) *morphological redundancy rule*

[/Adjective + {budan / šodan} /
+ V] ⟷ [/Adjective + kardan/
+ V]

While it does appear that the Lexicalist Hypothesis is capable of treating all causatives in Persian uniformly without missing their individual differences, its focus is to describe the nature of a relationship when one exists. Accordingly, instead of explaining what blocks the morphological causative in some verbs, the Lexicalist treatment simply interprets the non-existence of certain forms as "accidental gaps in the Lexicon," since such gaps are "always expected in the lexicon."

4.5.2 Ahangari (2009)

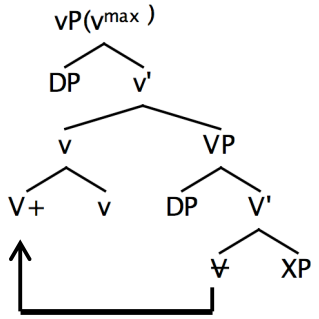
In contrast to an analysis of causative constructions within the Lexicalist framework, Ahangari[61] provides an analysis of causatives in Persian within the Minimalist framework (Chomsky 1995, among others).

Ahangari uses *the copy-deletion operation* (Chomsky 1995:352, Redford 2004: 339-348, and Hornstein et al. 2005:96-112) to suggest that the verb 'moves' from an inner VP shell to an outer vP shell under the copy-deletion operation. The tree is recreated below (2009: 4) to illustrate the

[61] I've provided a rough translation of his work here. All translation mistakes are mine.

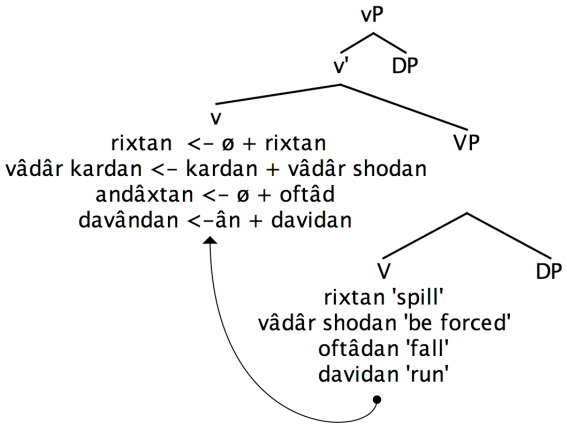
verb copying in the higher vP, and deleting from the lower VP position following Koopman and Sportiche (1991), and Chomsky (1995).

(133) Tree showing V →v movement



His analysis culminates in a unified grouping of inchoative-causative types by claiming they all show V→v movement, as indicated in the example below.

(134) *Tree showing intransitive verbs and causative alternation*



According to Ahangari (2009), intransitives that have a suppletive form, and verbs that have identical intransitive-transitive forms (i.e., labile) are verbs which when copied and joined with a ø little-v either remain unchanged, (labile), or have a complete verbal alternation (suppletive). He additionally unifies morphological and CPr causatives *vâdâr kard* 'force do' in this analysis by indicating that a CPr structure like, [NVE BECOME], and inchoative simple verbs when copied

to the higher vP are joined to little-v *kard* 'do' in CPrs, and *–ân-* in simple verbs to form their corresponding causatives.

The treatment for causatives in Persian suggested by Ahangari (2009) merits special consideration, which is outside the scope of this chapter. However, as it discusses *–ân-* and null little-v morphemes, I deemed it necessary to include his assessment. While, his work is relevant, it does not overlap or conflict with the findings in this or previous chapters which present the inner structure of verbs following DM (Halle and Marantz 1993). Ahangari's null verbalizer is not the same as the null verbalizer introduced in chapter 2, as the null verbalizer argued for in my work creates new output forms, even in the labile verbs and unaccusatives with suppletive causative forms, as seen in *riz+ø=rix* 'spill', and *mir+ø=mor* 'die.' In my work, the burden of why certain verbs have the same intransitive-transitive forms falls to the verb's argument selection during numeration. Accordingly, the intransitive 'spill' would have a vBECOME in its structure, while the transitive 'spill' would have a vDO; both take the null vocabulary item (VI) discussed in chapter 2. I addressed the small set of suppletive causatives for unaccusatives in section 4.4.6.1. Another difference between the analysis presented in this chapter, and Ahangari's analysis of morphological causatives is the position of causative morpheme. Ahangari claims the simple verb to move to v and combine with *–ân-*; however, this work claims a √+verbalizer structure, such that *–i-, ø*, and *–ân-* all occupy roughly the same position, and each √ +verbalizer is formed independently. This is in contrast to an analysis where the causatives are formed from an inchoative verb combining with a causative head.

4.6 Conclusion

My analysis incorporates the 'little-v' hypothesis and Distributed Morphology to examine the underlying structure of heavy verbs in Persian. In addition to illustrating that roots are acategorical

in Persian and morphological causatives are formed by affixing the causative morpheme to the root, this chapter unifies the analysis of simple verbs and using linguistic tests, illustrates a structural account for the idiosyncratic nature of causatives in Persian.

CHAPTER FIVE: CONCLUSION

This dissertation covers three types of simple verbs in Persian: The alternating class, the pseudo-infinitive class, and the set of simple verbs that causativize, and brings them all together under a simple unified analysis. This work, first and foremost follows the DM framework in assuming roots to be acategorical, receiving their category from the closest c-commanding function morpheme. For a verb, the closest c-commanding f-morphemes to the root are little-v, Tense and Aspect (Harley and Noyer 1999). Analyzing simple verbs in Persian to be composed of a [√+verbalizer] allows for a simple, yet elegant analysis of these verbs that not only covers the set of past/present alternating stems (*pardâz/pardâx-t* 'spend') discussed in chapter two, but also the set of verbs traditionally considered to take the *pseudo-infinitive* morpheme (e.g., *qalt/qalt-i-d* 'roll, tumble'). In chapter two, I argue for a null verbalizer between the √ and past tense affix that effectively accounted for the alternations to the past stem form of these verbs. In chapter three, I show the set of verbs considered the *pseudo-infinitive class*, *–id*, to be composed of an overt verbalizer, *-i-,* followed by the voiced version of the past tense affix, *-d*. In chapter four, I propose the causative morpheme in morphological causatives to also be a root attaching little-v, and by implementing Folli and Harley's (2002, 2004) 'flavors of v,' argue for a structural reason for the blocking of the causative morpheme in certain simple verbs. I show that whenever the verb structurally specifies a vDO flavor, regardless of which VI it selects for, the verb is unable to causativize, as the specified restrictions on the agent do not allow the subject to be demoted. However, if the verb does not specifiy a vDO flavor, the root has the option to combine with the causative VI in order to add causation and in most instances an agent causer to the construction. The analysis brought forth in this work has exciting implications regarding future work in verb

patterns in Farsi, and the presence of verbalizers in other Iranian languages and varieties of Persian, such as Sorani, Tajiki, and Dari to name a few.

One exciting finding in this work is that synchronic and diachronic language change confirms the theory presented here regarding the internal structure of simple verbs in Persian—namely, that simple verbs are internally complex. Evidence from this comes from comparing archaic verb forms to newer, more colloquial forms showing that over time speakers show a preference for the Elsewhere verbalizer over the null, or less used *–s,* and *–f* verbalizers: *ru/ro-s-t* 'grow' has become *ru/ ru-i-d* 'grow,' favoring *–i-,* over *–s-, a*nd *jah/jas- Ø-t* 'jump' has become *jah/jah-i-d* 'jump', favoring *–i-* over the null verbalizer. Additionally, synchronic changes in the language shows the simultaneous existence of both the archaic forms and the colloquial forms in verbs like *tâz* 'gallop,' which has both the more formal form *tâx-Ø-t* and the colloquial form *tâz-i-d* as past stems of the verb. This change is seen in more common verbs as well, where the use of either the formal *xof-Ø-t* or the colloquial *xâb-i-d* is available for the present form *xâb* 'sleep.' Of course, as Persian simple verbs give way to complex predicate forms, this correlation is not lost, as the verbalizers discussed in this work make way for more common LVs, as seen in verb changes like *geri-s-t* to *gerye kard* 'cried,' *qalt-i-d* to *qalt zad* 'tumbled, rolled,' *farif-Ø-t* to *farib dâd* 'tricked' (also *farib xord* 'become tricked'), and *feshor-Ø-d* to *feshâr dâd* 'pressed, squeezed.' To my knowledge, no work has focused on this aspect of language change in Persian, and there is room for much more research in this area of Persian linguistics.

In terms of the causative little-v, there is still more to be done in terms of expanding the analysis to other languages. Tajiki, a close relative of Farsi (a variant of Persian spoken in Tajikistan) implements the causative morpheme discussed in this work quite productively to almost all simple verbs. Additionally, Tajiki uses the causative morpheme as a productive verb-forming affix to

form verbs from borrowed words such *kolektiv-ân-dan* 'to collectivize' and *gur-ân-idan* 'to bury,' verbs formed from an English stem, and a Persian noun respectively, and even extends this root causative to the NVE or LV in certain simple verbs. Perry (2005) states that the causative "suffix is regularly applied to Complex and Compound verbs" (2005:448), as in (137).

(137) chengerâs zan-**ân**-d-am
bell hit-CAUS-PST-1sg
'I rang the bell'

If example (137) is analyzed as a CPr, then the causative morpheme is appearing in the LV. The causative morpheme can also end up in the NVE in Tajiki, where the LV *kardan* 'do' has been added to the construction, as in (138)[62].

(138) deraxt shin-**ân**-i kard-an
tree plant-CAUS-indf do.PST-inf
'tree planting'

Though Persian does allow some verbs to be formed from compounding the indefinite marker to an activity noun and then adding a light verb (e.g., *râhnamâ-i kard*), it never allows the causative affix in such constructions. While much more research is required to investigate this phenomenon, these examples provide us with a unique glimpse into the process of verb building in language, and can be of high interest to linguists studying verbal morphology in general, and complex predicate constructions in Iranian languages, specifically.

Another contribution of this work towards the study of verb structures and complex predicates is concerned with the formation of CPrs from simple verbs. While many CPrs are purely formed by combining some category (adjective, adverb, preposition, noun, or borrowed words) with a LV, such as *kard* 'do,' *zad* 'hit,' *xord* 'collide,' etc. (e.g., *tashxis dâd* 'recognized,' *râhnamâi kard* 'guided,' *email zad* 'emailed'), quite a few CPrs are formed from what was once an existing simple

[62] The NVE in the CPr in (138) "*deraxt shin-ân-i*" is an activity noun derived from suffixing the nominal suffix *–i* to the causative form (Perry 2005: 449).

verb. In such cases, the stem of the simple verb may take a LV, as in (139), or it may become the LV of the CPr, as in (140).

(139)	Simple verb →	As NVE	Meaning
	feshâr/feshor-d	feshâr dâd	squeeze, press
	shetâb/shetâf-t	shetâb kard	hurry
	farib/farif-t	farib dâd/xord	trick/be tricked

(140)	Simple verb →	As LV	Meaning
	pors/pors-id	so'âl porsidan	question asking
	pâsh/pâshid	dune pâshidan	seed scattering
	kesh/keshid	derâz keshidan	stretching, laying down

Although this dissertation did not touch on the construction of CPrs and their internal structure, the data collected here provides a great platform for further research on this topic, as this phenomenon provides fodder for assuming an acategorical storage of these roots that would allow them to receive different categories in their perspective CPr forms (i.e., root combines with [+v] to form simple verbs, but combines with a [+N] feature in the equivalent CPrs). The properties of the small set of simple verbs that also have a light verb form is outside the scope of this work and will be analyzed in future research. The findings here are also very important to the study of processing and production of language in real-time. As I mentioned in the introduction, a psycholinguistic analysis of simple verbs and complex predicates from a constructionalist point of view is sorely needed, especially since the theoretical findings in this work confirm the complex nature of these verbs.

Appendix A: *Colloquial Forms Used Instead of Alternating Past Forms*

Present form	***Past form***	***Frequent form***	***Meaning***
âmuz	âmux-t	yâd gereft /dâd	'learn, teach'
âsâ	âsu-d	'esterahat kard' rest do used instead but doesn't have the exact same meaning.	'lounge, relax'
anduz	andux-t	ja'm kard or zakhire kard	'store'
afruz	afrux-t	roshan kard	'ignite, kindle'
angiz	angix-t	Not used	'cause, motive'
âzmâ	âzmu-d.	Not used often 'emtehan kard'	'test'
afrâz	afrâx-t	Not used	'uphold, erect'
afrâz.	afrâsh-t	bala bord	'lift, upraise, hoist'
biz	bix-t	Not used at all alak kard	'refine, screen , sift'
pazir	pazirof-t	ghabul kard paziroft is also used but ghabul kard is much more common.	'accept'
pendâr	pendâsh-t	Not really used Fekr kard Also: 'goman kard' which is not very common, but more frequent than 'pendasht'	'assume, imagine, suppose'
sarâ (for some sorâ)	soru-d	âvâz xundan	'sing'
shetâb	shetâf-t	rarely shetaft is used, but ajale kard is common.	'hurry'
goshâ	goshu-d	Also baz kard	'open'
gozin	gozi-d	entexâb kard (chose)	'placed'
gosel/gosal	gosix-t	NOT USED pâre kard/ jodâ kard	'break off, rupture
gomâr	gomâsh-t	Not used Mansub kard (but not so common)	'appoint, nominate'
godâz	godâx-t	âb kard	'fuse, to melt'
goriz	gorix-t	Also farâr kard	'escape'
gosal/ gosel	gosas-t	Not used ghat' kard/ jodâ kard used instead	'partition'
xiz	xâst	boland shod or istâd	'stand, get up'
navâz	navâx-t	(saaz) zadan, violin navâxtan, violin zadan	'play an instrument'
ris	resh-t	Not used	'spin'
robâ	robu-d	Okay, but not used in colloquial speech. dozdid used more often	'steal'
kâr	kâsh-t	still used	'plant'

Appendix B: *Alternating Past Stem Forms Currently in Use*

Present form	***Past form***	***Frequent form***	***Meaning***
amiz	âmix-t	-	'mix'
andâz	andâx-t	-	'drop, throw'
âfarin	âfari-d	-	'praise, to create'
â	âma-d	-	'come'
bar	bor-d	-	'take'
bâz	bâx-t	-	'lose'
bin	di-d	-	'see'
bâsh	bu-d	-	'be'
band	bas-t	-	'close'
peivand	peivas-t	-	'connect, attachment'
pazir	pazirof-t		'accept'
paz	pox-t	-	'cook'
pardâz	pardâx-t	-	'spend'
peima	peimu-d	-	'travers, to cover'
sâz	sâx-t	-	'fix'
suz.	sux-t	-	'burn'
sepâr	sepor-d	-	'bestow, entrust'
shomâr (shemâr)	shomor-d (shemor)	-	'count'
shenâs	shenâx-t	-	'know, recognize'
shu or shur	shos-t	-	'wash'
shekan	shekast	shekund	'break'
farmâ	farmu-d	-	'ordered, said, decree'
forush	forux-t	-	'sell'
feshâr	feshor-d	feshâr daad	'press, apply pressure'
goshâ	goshu-d	baz kard	'open'
gozâr	gozâsh-t		'let, to put'
gozar	gozash-t		'pass'
gard	gash-t		'search'
goriz	gorix-t	-	'escape'
geri	geris-t.	gerye kard	'cry'
gu	gof-t	-	'say'
gir	geref-t	-	'get'
chin	chi-d.	-	'collect, gather'
mir	mor-d	-	'die'
zan	za-d	-	'hit'
tâz	tâx-t	-	'gallop'
tavân	tavânes-t	-	'ability, can'
neshin	neshas-t	-	'sit'
kâr	kâsh-t	-	'plant'
kon	kar-d	-	'do'
kub	kuf-t	kubid	'pound'
dâr	dâsh-t	-	'have'
dân	dânes-t	-	'know'
duz	dux-t.	-	'sew'
r(av)	raf-t	-	'go'
riz	rix-t	-	'spill'

Appendix C: *CPrs Used Instead of Archaic Past/Present Forms*

Present tense	***Past tense form***	***more frequent form***	***Meaning***
âzâr	âzor-d	âzâr dâd	'bother'
âviz	âvix-t	âvizun kard	'hang'
-------	âshof-t	âshofte kard/shod	'agitate, disturb'
afzâ	afzu-d	afzâyesh dâd also: ezafe kard	'increase'
âlâ	âlu-d	allude kard kasif kard	'make dirty'
ârâ	ârâs-t	ârâyesh kard	'beautify'
peivand	peivas-t	Peivast and peivand dâd (both)	'connect, attachment'
pardâz	pardâx-t	pardâx still used pardâx kard 'spend money' pardâx/ or simply kard to reference 'time spent'	'spend'
pendâr	pendâsh-t	Not really used Fekr kard Also: 'goman kard' which is not very common, but more frequent than 'pendasht'	'assume, imagine, suppose'
setâ	sotu-d	setayesh kard	'bestow'
sarâ (for some sorâ)	soru-d	âvâz xundan	'sing'
shekâf	shekof-t	Separate roots: Shekâftan: pâre shodan/kardan, Shekâf zad Shekoftan: shekufe zadan/baz shodan/javune zadan	'blossom, split'
shekan	shekast	shekund	'break'
farib	farif-t	farib dâd/xord Also: gul zad/xord	'trick' (farib xord/zad)
feshâr	feshor-d	feshâr dâd	'press, apply pressure'
geri	geris-t.	Gerye kard	'cry'
negar	negaris-t	negâh kard	'look, behold'
kâr	kesh-t	kesht kard/ kâsht	'cultivation, planting, tilling'
kâh	kâs-t	kâhesh dâd kam kard	'decrease, whittle'
kub	kuf-t	kubid	'pound'
ju.	jos-t	jost o ju kard also: gashtan	'search'
jah	jas-t	jahid/ jahesh zad: these are not really used. parid is more common.	'jump'
ru	ros-t	ru-id dar umadan	'grow, sprout,
ru(b)	rof-t	jaru zad/kard (ja space ru sweep)	'sweep, to wipe'

Appendix D: *Simple Verbs and Causative Behavior*

verbs that take the causative morpheme		***verbs that block the causative morpheme***	
paridan	jump, fly	bastan	close
neshastan	sit	afrâshtan	raise (a flag)
laqzidan	slip, shake	vazidan	blow(breeze)
suxtan	burn	nemudan	do
jushid	boil	gosastan	tear, break off
pichidan	twist	qâpidan	snatch
chasbidan	stick	shekâftan	split, tear
xordan	eat	shostan	wash
larzidan	shiver, flicker, tremble	sâxtan	make, build
gardidan	turn, rotate	dâshtan	have
keshidan	drag, draw	xândan	read
fahmidan	understand	jestan	jump, leap
qaltidan	roll over	âshamidan	drink
raftan	go, move	âfaridan	create
residan	ripen, arrive at	âvixtan	hang, suspend
chekidan	drip	bâxtan	lose
charidan	graze	bâridan	rain
jonbidan	move, shake	bâftan	knit
tâxtan	gallop (horse)	baxshidan	grant, forgive
âmuxtan	teach, learn	bordan	take away
xaridan	itch	porsidan	ask
pushidan	dress, cover	javidan	chew
tarsidan	fear	jahidan	leap
tar(a)kidan	pop(a balloon), break	xâstan	want
jonbidan	move, shake	duxtan	sew
chapidan	be jammed	didan	see
charxidan	rotate	shekoftan	open (bud), cheer up
xâbidan	sleep	shemordan	count
davidan	run	feshordan	squeeze
geristan	cry	kandan	dig, up root, pick
residan	ripen, arrive at	yâftan	find
raghsidan	dance		
ranjidan	be annoyed		
shekastan	break, shatter		
kubidan	pound, beat, knock out		
harâsidan	scared		
bargashtan	return		

Appendix E: *Full List of Simple Verbs*

Â

ârâstan	put on make up
âzmudan	conducting tests
âshamidan	drink
âfaridan	create
âmadan	come, arrive
âmuxtan	teach, learn
âmixtan	mix
âvardan	bring
âvixtan	hang, suspend

A

afrâshtan	raise (a flag)
afrâxtan	hoist
afruxtan	light, kindle
afzudan	increase
anbâshtan	till up
andudan	plate, inlay, coat
andishidan	reflect

O

oftâdan	fall

I

istâdan	stop, stand

B

baxtan	lose
bâridan	rain
baftan	knit
baxshidan	grant, forgive
bordan	take away
bargardandan	return (a thing)
bargashtan	return (a person)
bargozidan	choose
boridan	cut
bastan	close
bal'idan	swallow
budan	be, exist
busidan	kiss

P

pa'idan	be careful, guard
pashidan	scatter

poxtan	cook
paziroftan	accept
pazirândan	make accept
parakandan	disperse
parandan	make fly, throw
paridan	jump, fly
pardaxtan	pay
porsidan	ask
parastidan	worship
pasandidan	approve
pandashtan	consider, be of opinion
pusidan	decay
pushidan	dress, cover
pushanidan	make someone dress
pichidan	wrap up
peimudan	cover distance
peivastan	join

T

tâbidan	shine
tâxtan	make gallop (horse)
tapidan	pulsate, beat
tarashidan	sharpen, cut
tarsidan	fear
tarsanidan	frighten
torshidan	become sour
tar(a)kidan	pop (a balloon), break
tar(a)kânidan	make something pop
tavânestan	can, be able
talabidan	call, seek, summon

J

jestan	jump, leap
jostan	search
jangidan	fight
jonbidan	move, shake
jonbanidan	make something move, make something shake
jushidan	boil
jushanidan	make boil
javidan	chew
jahidan	leap

CH

chapidan	loot, plunder
cha'idan	catch a chill
chapidan	be jammed

chapanidan	cram, jam
charidan	graze
charanidan	graze
charxandan	rotate
charxidan	rotate
chaspanidan	make stick
chaspidan	stick
cheshidan	taste
chekidan	drop, drip
chekanidan	make something drip
chelandan	squeeze
chidan	pick up, cut, arrange

X

xaridan	itch
xaranidan	scratch
xarashidan	scratch
xaramidan	strut
xaridan	buy
xazidan	creep
xoftan	sleep
xandidan	laugh
xabidan	sleep
xabanidan	put to sleep
xastan	want
xandan	read
xordan	eat
xorandan	feed
xordan	suit, match

D

dadan	give
dashtan	have
danestan	know
deraxshidan	shine
darmondan	remedy
daridan	rip
dozdidan	steal
damidan	inflate, blow
davidan	run
davanidan	make run
duxtan	sew
didan	see

R

rândand	drive, move

robud an	steal, snatch
resândan (be)	deliver
residan	ripen, arrive at
reshtan	spin, twist
raftan	go, move
raqsidan	dance
ranjidan	be annoyed
ranjanidan	annoy, afflict
ru'id an	grow
rixtan	spill

Z

za'idan	give birth
zadan	hit, strike
zodudan	rub off, polish

S

sa'idan	wear out, grind
saxtan	make, build
sepordan	entrust
setandan	take, get
sereshtan	mix
sorfidan	cough (archaic) [Colloquial: sorfe kardan]
sorudan	sing
soridan	slide [Colloquial: sor xordan]
sanjidan	measure
suxtan	burn

Sh

shetabidan	hurry
shashidan	urinate
shodan	become, get
shostan	wash
shekaftan	split, tear
shekastan	break, shatter
shekoftan	open (bud), cheer up
shemordan	count
shiftan	fascinate

Q

qabidan	snatch
qorridan	rave, roar(lion)
qaltidan	roll over
qabulândan	make accept

F

ferestâdan	send

farmudan	say
foruxtan	sell
fariftan	deceive
feshordan	squeeze
fahmidan	understand
fahmanidan	make understand

K

kastan	decrease
kashtan	sow(plant)
kardan	do
keshandan	drag, draw
keshidan	drag, draw
koshtan	kill
kandan	dig, up root, pick
kubidan	pound, beat, knock out
kuftan	pound, bruise

G

godaxtan	melt
gozardan	put, place
gozashtan	let, allow, put
gozashtan	give up, pass, cross
gozarândan	spend (time) pass(law)
gera'idan (be)	be inclined*
gardidan	turn, rotate
gardanidan	turn round, spin, manage
gereftan	get
geru'idan	believe in*
gorixtan	flee
geristan	cry
gozardan	pay, serve, perform
gazidan	bite, sting
gozidan	choose, select
gostardan	spread
gosastan	tear, break off
goshudan	open
goftan	say
gandidan	rot
gashtan	turn, become, (also search)
gonjandan	place, insert

L

larzidan	shiver, flicker, tremble
laqzandan	cause to slip
laqzidan	slip

lamidan	lean, relax
langidan	limp
lulidan	squirm
lisidan	lick

M

masidan	be congealed
malidan	rub
mandan	stay
mordan	die
morandan	cause to die

N

negashtan	write, paint
namayandan	show
nemudan	do
navaxtan	play(instrument)
nushidan	drink
nushandan	make drink
neveshtan	write
nahâdan	place (somewhere), put down
neshandan	make site
neshastan	sit
nazidan	boast of
namidan	(to) name

V

varzidan	train/exercise
vazidan	blow(breeze)

H

harasidan	scared
harasanidan	scare

Ye

yaftan	find

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